IMPROVING DESIGN AND ADMINISTRATION OF GOVERNMENT SUPPORT PROGRAMMES FOR INDUSTRY

By

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ABSTRACT

This thesis describes the research which has been undertaken into a particular area of policy making in the UK, that of the process of designing and implementing programmes aimed at helping industrial firms to become more competitive. Investigations have focused on how the design process is conducted within the Department of Trade and Industry (DTI), which has lead responsibility for industry in Whitehall.

The research had two primary aims. First was to provide a detailed description of the process of designing programmes. Based on the research findings it is proposed that the process comprises the components of 'Issue Identification', 'Programme Implementation', and 'Evaluation and Feedback'. The thesis discusses the private nature of the work involved in programme design, and that consequently researchers are often unable to directly observe the activities comprising the process. It is suggested that the veil of secrecy surrounding the development of programmes has prevented substantial debate of this research topic. As a civil servant employed in the DTI, the author has been able to review the activities involved 'first hand', and uncover numerous aspects of the process previously not investigated. Based on the analysis of five case study examples, a systems model has been developed which provides a detailed description of the structure of the design process, and the mechanisms that are employed.

The second aim of the research was to develop proposals for improving current arrangements, towards achieving better value for money in the design and operation of support programmes. The thesis describes how a Business Process Re-engineering approach was adopted to exploit the detailed knowledge of the design system which had been gained, with the aim of discovering deficiencies in the current process and developing proposals for overcoming problems. Investigations showed that the current guidance provided to officials employed in programme design is inadequate in fully supporting them in the task. It is suggested that this deficiency can be overcome through the introduction of a new set of comprehensive guidance, to be contained in an alternative document referred to as the *Handbook for Programme Design and Operation*. The handbook, it is proposed, would comprise good practice advice across the broad range of activities involved in programme design. Proposals for further improving the design process through the introduction of effective knowledge management were also developed, and these are again set out in the thesis.

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AUTHOR'S DECLARATION

At no time during the registration for the degree of Doctor of Philosophy has the author been registered with any other University for an award.

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Signed R. C. Downing

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CHAPTER 1

INTRODUCTION TO THE RESEARCH

1. INTRODUCTION TO THE RESEARCH

1.1 Introduction

The subject of the research described in this thesis falls within the domain of public policy, and is concerned with policy making. However the research focuses on a particular part of policy making, that of the design and operation of programmes which aim to support firms, especially those in the industrial sector, in becoming more competitive. It is appropriate to consider the design of such programmes as being an integral part of policy making. The government white paper *Modernising government* (Cabinet Office, 1999) states:

"*Policy making is the process by which governments translate their political vision into programmes and actions to deliver 'outcomes' - desired changes in the real world*",

(Cabinet Office, 1999, p. 15).

This thesis looks at how civil servants take ministers' aspirations for businesses and develop and run activities targeted at achieving the government's objectives. The author felt it to be an area where he could usefully contribute to the growing wealth of knowledge which has been created in the public policy arena. He was encouraged by the comments of other researchers in the field, especially Hogwood, who wrote:

"*There is plenty of unfinished business in public policy studies in Britain, and clearly sufficient interest in public policy for that business to be pursued*",

(Hogwood, 1995, p. 71).

Thus the scene was set for undertaking the research described in this thesis.

The hypothesis to be substantiated in this thesis is that the efficiency of the programme design process within government may be improved through making better use of the corporate knowledge of scheme design, built up over the years. In substantiating this hypothesis it was also intended that a useful contribution to knowledge could be made.

In the United Kingdom (UK) the Department of Trade and Industry (DTI) has lead responsibility in government for promoting industry and business generally (Rhodes, 1988, p. 330). Over the years the department has introduced many programmes aimed at helping firms compete in the global marketplace. Historically DTI's remit has been industrially defined (DTI, 1992, p. i), although in more recent years policy has been widened to place an increased level of emphasis on businesses more generally. Whilst the aim of this research was to produce a set of outcomes of relevance to the Whitehall departments as a whole, the focus of research was placed on DTI, given its leading role. Research has also been weighted towards schemes helping industrial firms, reflecting DTI's historical focus on this sector. As discussed in section 1.9 below, there are good reasons for supposing procedures adopted within DTI are essentially the same as employed elsewhere in Whitehall, and thus the research results will be of wider application.

In researching DTI programme activities the emphasis has been placed on programmes employing the mechanism of grant funding to encourage firms to adopt good practice, be it to undertake more research and development or to adopt better management practice. The author highlights at this point that the emphasis is always placed on the encouragement of organisations to take desired actions. Officials do not adopt an attitude of telling people what to do. Research also investigates awareness activities which normally are not the subject of grant funding, but where departments award contracts to organisations to develop and run projects aimed at helping firms understand the business issues. These areas were chosen for study on the basis that they feature regularly in the business support policies delivered by governments of the developed world (Cunningham and Barker, 1992, section 2, parts 2-4); (see also chapter 3, section 3.2.2). These types of interventions are contrasted with

situations where, for example, research and development (R&D) and Technology Transfer is promoted as a result of a government undertaking large scale procurements for, say, military equipment (Clark and Guy, 1998, pp. 388-389).

In selecting the programmes to focus upon in his research, the author took his lead from the government white paper *DTI - the department for Enterprise* (HMSO, 1988, pp. 24-27, 33-37, p. 41). This white paper is viewed as a landmark in shaping programme policy within DTI, and its influence is still visible in terms of the programmes operated by the department in the year 2000. Activities described in the white paper may thus be considered as having played a strategic role in helping the government achieve its aims.

The DTI White Paper (HMSO, 1988 p. 41) signalled the launch of the now famous Enterprise Initiative (EI), which was launched at around the time of publishing the paper. EI acted as an umbrella for promoting DTI's business support activities. In so far as the subject areas of research was concerned, the Research and Technology (R & T) Initiative, the Consultancy Initiatives (CI), Managing into the 90s (M90s) and the Manufacturing, Planning and Implementation (MPI) programmes, were considered by officials as the high profile schemes operated under EI. These interventions, including the role of EI, were therefore targeted in the research, and they are described in detail in appendices D to H respectively. Section 1.10 below contains further discussion of the selecting of the case study examples.

Confidence that the case study examples are representative of programme design and administration more generally was drawn from the HM Treasury *The Green Book: Appraisal and Evaluation in Central Government* (HMT, 1997, p. 29, pp. 32-33). The 'Green Book' stipulates that in introducing and operating programmes, the Whitehall departments must prepare ROAMEF statements which set out cases for support in terms of the Rationale, Objectives, Appraisal, and arrangements for scheme Monitoring, and Evaluation and Feedback. The need for departments to conform to ROAMEF

procedures enforces a discipline on the design process, which results in conformity in approach across Whitehall, including the individual directorates within DTI.

The author felt he was in a good position to study programmes in the chosen areas. He has been employed by DTI since January 1985, working principally in the area of the design and administration of programmes aimed at helping firms become more competitive. He was first employed at the level of PTO1 (Professional and Technology Officer - Grade 1), and then as a Grade 7 heading a Unit. Both positions have allowed him to build a weight of experience in programme design, and how the department operates more generally. He therefore anticipated that he was in a strong position to undertake research of the development process within the department. The author is aware that the Civil Service, in keeping with other organisations, has its own specific culture, derived from a history of events, which provide the framework dictating the ways in which departmental business is undertaken. By way of helping the reader to put into context the findings of research, chapter 2 explains a number of terms and the background to procedures related to the process of designing and administering programmes.

Section 2.2 begins by discussing the differences between 'initiatives', 'schemes', 'programmes' and 'projects'. At this point it is worth summarising the findings of section 2.2. The terms 'initiatives', 'schemes', and 'programmes' are often used interchangeably, and are used to describe 'umbrella' activities under which a number of sub-activities will be supported. For example, in programmes for which the main subject is R&D, a programme will normally comprise several discrete R&D projects. Section 2.2 also draws a distinction between Research and Technology (R & T) schemes and 'advisory' schemes. R & T programmes is the general term used to describe schemes focusing on technical activities such as R&D, and Technology Transfer. Advisory schemes focus on providing advice to firms, and include 'awareness' programmes and those initiatives concerned with encouraging firms to use consultants.

Chapter 2, section 2.3 discusses the structure of financial administration in the running of schemes, and section 2.4 introduces the three sets of primary guidance which are available to officials engaged in the design process. Section 2.5 outlines the changes in policy in recent years towards the support of businesses, which reflects a less interventionist stance by the government. Finally, section 2.6 provides an outline of the grade structure within DTI. People unfamiliar with the Civil Service and the background to programme development in government are commended to read chapter 2 before moving on to subsequent chapters. Conversely, those familiar with the procedures involved should pass over it. The following sections in this chapter record how the idea for the research came about, how the research objectives were developed, and the research questions designed to meet those objectives. Then follows a précis of the work undertaken in support of drafting this thesis. It does so by summarising the content of each the successive chapters, which describe the investigatory work undertaken and the results achieved.

1.2 Conceiving the Idea for Research

Two stimuli prompted the author to undertake the research described in this thesis. The initial stimulus which motivated the author arose from the government's fervent wish to ensure that value for money (VFM) is achieved in all activities undertaken on its behalf. The government's desire to achieve better VFM was announced with the publication of the government white paper *Efficiency and Effectiveness in the Civil Service* (HMSO, 1982, pp. 5-6), which introduced the Conservative Government's Financial Management Initiative (FMI). FMI represented the government's drive to achieve value for money in the activities undertaken on its behalf across the Whitehall departments.

Given FMI's drive for efficiency, the author stood back and reflected on the process of designing and operating support programmes for helping Small and Medium sized Enterprises (SMEs) to improve their competitiveness. He felt that current arrangements could be improved. Over time a wealth of experience in operating programmes had been developed across Whitehall, and this corporate knowledge base was continually being built upon. However the author observed that insufficient

reference to this knowledge, even within DTI itself, was being made by those engaged in programme design. Therefore he concluded that the process of developing programmes was probably less than optimal, as officials were not making use of corporate experience to help inform them in the design process. It was thought that lack of use stemmed from the difficulties associated with accessing corporate knowledge, and identifying the means to correct this problem was thought highly desirable.

The corporate knowledge base was seen as comprising two, principal elements. First people carry personal knowledge on programme design in their heads, that is, tacitly. Second, programmes are usually subjected to evaluation to ensure that VFM has been achieved (Guy, 1998, p. v), and the resulting evaluation reports contain details on the efficacy of approaches adopted in running schemes. However there are difficulties in accessing these sources of knowledge. Whilst people can be questioned in relation to their experiences, the employee count in the Civil Service is high. DTI itself employed in excess of 11,000 personnel in 1995 (HMSO, 1995c, p. 85), and it is impractical for officials to know about and track the work undertaken by all their colleagues to determine that which may be of relevance to them.

The total number of evaluation reports is also large. For example, a list of the evaluation reports completed between 1983 and 1992 was compiled by DTI evaluators, principally for their own use (appendix A, p. 2). A total of 131 DTI reports were listed. Since the list was compiled many more reports have been prepared. The list is not generally available within the department, and indeed no definitive list of reports has since been prepared within DTI, let alone across government. The large number of evaluation reports, coupled with a lack of detail on their availability, renders the task of identifying relevant documents very difficult for officials. In talking to colleagues, the author found that with the exception of those evaluations directly related to peoples' responsibilities, officials generally make no reference to reports of previous programmes.

Other factors were also observed to be contributing to the difficulty of accessing the corporate knowledge base. Government departments were being subjected to continuous change (Doig, 1995, p. 191; Doig and Graham, 1998, p. 489; Theakston, 1998, p. 13) which precipitated in DTI, as elsewhere, the movement of people inside and outside the department, with some lost to the Civil Service altogether through severance and early retirement. In many cases knowledge was therefore being lost completely. The author had witnessed many of his colleagues leaving the department on severance terms or early retirement. Others had moved to other departments. From these observations the author concluded that, overall, the design process was unlikely to be as efficient as it could be, and therefore potential for improvement existed. The author would add that for many years it has been an unwritten rule that, 'to get on in the Civil Service' officials must change their posts every two years. Thus as officials become experienced in their jobs, they have then tended to move on, reducing access to their expertise by those they leave behind.

A further factor was identified. The 'Competitiveness White Paper', *Realising our potential* (HMSO, 1993, pp. 11-15) signalled a shift in policy in DTI from traditional support of R&D programmes towards placing the emphasis on encouraging firms to begin making more use of the new technologies which had already been developed. The view was also expressed within DTI that its Innovation Budget, from which its R&D support is mainly funded, was small at around £100 Million compared with that spent by industry, or, for example, the Ministry of Defence (MoD) through its defence contracts. Ministers argued that DTI's contribution was 'swamped' by the contribution of others, and therefore of an insufficient size to make a significant difference.

Against this background, it was felt that DTI's limited resources could be more efficiently spent on helping firms raise their competitiveness by improving access to new technologies and businesses processes. For example, the white paper (HMSO, 1993, p. 15) refers to the setting up of a network of 'One Stop Shops', which resulted in DTI introducing the Business Links (BLs). The author considers

that the shift in policy also reflected the former Conservative Government's less interventionist stance, a topic which is discussed further in chapter 2, section 2.5.

A senior official (Grade 6) on learning of the author's research relayed his concerns over the shift of emphasis in policy. These concerns stemmed from the resulting cessation of many of the department's traditional activities, which were regarded by officials as being of value to industry. (The author concurs. For example, inspection of appendix K, (p. 164, shows that an evaluation report found the closure of a scheme to be a matter of regret). There was a fear that valuable experience of how to operate these programmes would slowly leach away, resulting in a loss of knowledge of how they add value, and of how to set them up and run them (Dunleavy, 1995, pp. 62-63). The official informed the author that senior officials had informally approached ministers with a proposal to review what had been undertaken in order that the lessons could be captured for possible future use. Ministers flatly refused to countenance the idea. Whilst not viewed as a primary objective of research, the author took the view that findings recorded in this thesis should provide a valuable archive for those wishing to look back over the history of programme development.

The author resolved to investigate the possibilities of improving the design process. He began by seeing if any articles had been published on designing support programmes for industry.. He asked the DTI Library to undertake a search of the titles and abstracts. Using the keywords 'government schemes', 'mechanisms', 'success', and 'failure', the sources of information located and interrogated were National Audit Office Reports; the ISMEC, Compendex, and the Current Technology Index databases; the Havard Business Review; Textline (reference to the OECD annual review of industrial policy); Profile UKNEWS, CD-ROM (Compact Disc Read Only Memory) searches – Whittaker's Bookbank, British National Bibliography, Books in Print (US); SIGLE (a database of 'grey' literature, i.e. pamphlets and reports etc.); and finally the BLAISE Conference proceedings database. The search took in articles and reports covering the period 1977 to 1992. Around forty references were identified

but nothing of direct relevance to the research among these was found. He also undertook an initial survey of the literature but found little of relevance.

The author proposed that the lack of reference in the literature to the process was largely due to the work of officials in this area being an essentially private activity. The requirement to respect the requirement of the *Official Secrets Acts* (1989), coupled with the need to also respect the confidentiality of ministers and senior officials, creates a '*veil of secrecy*' (Hennessy, 1990, p. 4, 344) which shrouds policy making from external examination (Weller and Stevens, 1998, p. 579). This suggested that the level of published knowledge on the process of designing support policy was likely to be low, as had been initially indicated by interrogating the publications database. It was therefore thought that there was significant scope for research to extend the level of understanding of the design process, and thus make a useful contribution to knowledge. This opportunity represented the second stimulus for undertaking the research. The author, as a civil servant, was in a position to study the design process directly from an 'insider's' perspective, and make that contribution to knowledge.

Given Hogwood's (1995, p. 71) views about there still being much to do and the level of interest in researching public policy, these latter observations provided the second, and perhaps the greatest, impetus for the author to undertake his research. The author considered the design and implementation of programmes to be a specific but very important part of policy making, as programmes often represent the means by which ministerial policy is carried out. He felt he had been presented with a genuine opportunity to make a useful contribution to knowledge, simultaneously with identifying means of improving the design process to achieve greater value for money. Thus two overriding objectives which comprised an initial rationale for undertaking the research had been identified, and may be stated as follows:

a) To contribute to knowledge in the area of policy by obtaining a description of the process of designing and administering programmes which help firms become more competitive, through detailed research of that process;

b) To exploit the findings of research to identify ways in which the design process can be improved to become more efficient and effective, such that value for money is increased.

In regard of (b) above, the author was not devoid of ideas at the beginning. He had observed the practice of issuing guidelines to officials engaged in programme work. These guidelines are intended to help individuals understand what they are required to do in developing and administering programmes. They effectively steer people through the process to ensure policy is adhered to. In particular, successive versions of the *Innovation Budget Guidelines* (DTI, 1992, 1996a, 1999a), which are aimed at helping officials engaged in developing Research and Technology (R & T) schemes, enjoy widespread use and are highly regarded by those who make use of them. Indeed, the author himself has experienced many occasions of needing to refer to the guidelines for assistance, and has found them helpful.

The author considered the practice of issuing guidance to be an example of good practice. It suggested to him that the introduction of a new set of guidelines, to be called the *Handbook for Programme Design and Operation*, containing a broad range of advice based on the lessons learned in practice in designing and operating programmes, would be one way of improving access to corporate knowledge. Thus the third objective (c) below was defined:

c) As part of (b), to develop proposals for a set of good practice guidance for inclusion in a future *Handbook for Programme Design and Operation*.

1.3 The Rationale for Research

Before embarking on what was thought to be a significant research exercise, the author considered it first necessary to carry out preparatory studies to demonstrate that there existed a clear rationale which justified undertaking the proposed investigatory work. The objectives (a) and (b), described above, were seen as defining the principal strands of a rationale. In the case of the former, it had to be demonstrated that it was likely that the proposed research had the potential to make a significant and useful, contribution to knowledge. For the latter, it had to be established that the research had practical value in addressing the problem of improving access to corporate knowledge. These considerations suggested that three research questions should be posed. The following sections firstly discuss how the questions were derived, and secondly summarise the responses provided in chapter 3. It was concluded that a clear rationale existed.

1.3.1 Contribution to Knowledge

Potential to make a contribution to knowledge was seen as to exist if it could be demonstrated that the levels of understanding about the process of designing and administering support programmes was low and exhibited gaps such that investigations would be worthwhile in terms of making a credible contribution.

Hence the first question posed for research to answer was:

(i) "What is the current, documented understanding of the process of designing and operating support policy, how well is the system described, and do significant gaps in existing knowledge exist"?

Although 'secrecy' considerations meant it unlikely that there would be a volume of articles on the research topic, the author felt that a close examination of the literature would nevertheless yield useful

information. It was important to establish the level of current knowledge and confirm gaps existed. A formal study of the literature was carried out to help determine the current status of knowledge.

Chapter 3, section 3.2.1, records the findings of this study. It was found that the topic of this research was under investigated, with research work traditionally focusing on the 'core executive' (Smith, Marsh, and Richards, 1993, p. 567). Weller and Stevens, (1998, p. 583) were found to uphold the author's suspicion, that lack of reference in the literature is mainly due to civil servants having to maintain confidentiality over the intricacies of policy making. Examination of the literature also revealed study of policy making to be essentially undertaken by 'outsiders' who would suffer restricted access to the process itself. Study of the literature confirmed Smith, Marsh, and Richards's views, with little of significance to the research being found. Thus it was concluded that policy making within government is an area in which much could be learnt, and it followed that the proposed research would therefore be able to make a useful contribution to knowledge.

1.3.2 Identifying General Interest in Improving the Designing Process

The second objective (b) above concerned finding ways of improving the process of designing programmes, which pointed to further factors requiring to be considered in identifying a credible rationale. Section 1.2 above indicated good grounds for supposing that the process was not making best use of the corporate knowledge base within government, and improved access to collective experience could be beneficial. However a good reason for studying the design process and investigating possibilities for making it function better was required. It had first to be established that there was likely to be a sufficient level of general interest in the deliverables of research to render the research task of value. A way of predetermining the levels of interest was to gauge the level of government involvement in supporting firms in the developed world. It was thought that widespread activity in this area could be interpreted as implying the likelihood of general interest in the research deliverables. The second research question to be answered was then:

(ii) "Is the level of activity by governments internationally, in delivering support policy, sufficient to warrant investigation of the processes involved"?

Chapter 3 section 3.2.2, looks at the levels of spend by governments on programmes aimed at improving the competitiveness of firms. The author took the view that an economic rationale had to be identified. If spend on such support policy was high, then there would likely be an interest in measures which could be taken to help bring about cost savings. The literature survey concluded that levels of spend are high, and that, in identifying ways to improve VFM, the planned research would be widely viewed as of value. It was therefore concluded that there was likely to be a sufficient level of interest in the research results to justify the investigatory work.

1.3.3 Establishing Evidence of Deficiencies

Having established that there was potential to make a credible contribution to knowledge, and that the results of research were likely to be of benefit to the public sector more widely, the final stage in establishing a case for undertaking the proposed studies was to gain evidence of there being problems with the current design process. In conversation the expression 'if it ain't broke don't fix it' is often heard. The author is amongst those who support this philosophy. There is little value to be obtained, he argues, from modifying something which is already working efficiently. Hence he felt the need to gain more substantive evidence which would give reasonable grounds for supposing problems with current procedures. The third research question to be placed aimed to establish grounds for thinking that there was room for improvement; that is:

(iii) "Is there any evidence to suggest that current procedures are in substantial need of improvement"?

Chapter 3, section 3.2.3 provides the evidence which indicated problems with the current system of designing policy for support programmes. Dunleavy (1995, p. 52) and Klijn, Koppenjan, and Termeer (1995, p. 437) refer to policy mistakes made in the UK and elsewhere. Dunleavy (1995, p. 54)

proposes that problems are particularly acute in the UK, with Theakston (1998, p. 17) suggesting civil servants' input to policy making as being too weak. Concerns were also expressed over Whitehall's capacity to develop policies having been damaged by successive reorganisations in recent years, with many commentators proposing the need now for review and improvement. Dunleavy (1995, p. 62) continues, referring to the shift in emphasis away from policy towards a concentration on the management issues. He also highlights the writing off of 'intellectual capital', as less use was made of experienced civil servants in favour of politically aligned 'think tanks' and outside experts. Greater reliance has also been placed on younger, inexperienced civil servants. The setting up of the 'Next Steps Agencies' (Efficiency Unit, 1988) has also contributed to a loss of expertise, with experienced officials moved out from their traditional, policy making roles (Dunleavy, 1995, p 62-63). DTI is seen as not having escaped these changes. The National Audit Office (NAO) in their report *The Department of Trade and Industry's Support for Innovation* (NAO, 1995, p. 13) refer to the department having both reduced the number of headquarters staff and reorganised its functions.

Finally, the government's white paper *Modernising government*, Cabinet Office (1999, p. 15) provides support for the view that deficiencies exist in the current process. It refers to the previous emphasis on management reform, but highlights that little attention has been paid to the policy process. The likelihood of serious problems existing in policy making and, by inference, in that part of policy making concerned with the development of support programmes had been confirmed. The white paper (Cabinet Office, 1999, p. 9) also related the government's commitment for improvement, thereby supporting the author's rationale to research ways of making the design process better.

1.4 Specifying the Research Task

Section 1.3 above set out the three, initial research questions to be answered in establishing a clear rationale for the research, and outlined the work described in chapter 3, the 'Literature Review', which was undertaken to provide answers to these questions. A rationale for the research was seen to exist. In answering the initial questions it had been established that there were significant gaps in the

knowledge of designing and implementing programmes, that good reasons existed for supposing current arrangements were less than optimal, and that it was probable that there was wide interest in improving matters. It was hence decided to proceed with the main research task, which was concerned with investigating in-depth the design and administration process.

Section 1.2 above described the overriding objectives for the research, which can be summarised as being (a) to make a contribution to knowledge, and (b) to discover ways in which the current design process could be improved. As in the case of substantiating the rationale for research, these twin objectives provided the point of reference for defining the investigatory tasks to be carried out. The following text describes how three further questions were identified for research to answer, such that the two objectives were met. The text also contains summaries of the work undertaken and the conclusions reached.

1.4.1 Strategy for Discovering the Nature of the Design and Administration Process

To improve the understanding of how programmes are introduced and operated, and in forming the basis for identifying how improvements could be made, it was seen as first necessary to carry out a detailed study of the present process. The fourth question for research to address was then:

(iv) "What is the scope of the process describing the designing and implementing policy for introducing and operating programmes which support firms in becoming more competitive, what comprises that process in terms of the elements which make up the whole system, and how do these elements interrelate in delivering support policy"?

The objective in answering this question was to gain a comprehensive understanding about the design and implementation process, identifying the component systems which comprise the process and how these in turn operate and interrelate with each other.

Chapter 3, the 'Literature Review' was able to provide guidance for how research of the design process should be conducted. Although reference to the process was restricted, study of the literature nonetheless yielded some useful information and guidance. Weller and Stevens (1998, pp. 582-583) were found usefully able to suggest the structure of the design and administration process as comprising 'Issue Identification', 'Programme Implementation', and 'Evaluation'. Section 3.2.5 of the review also describes how within 'Issue Identification', quality in the process of developing programmes is enhanced by adopting a structured approach in scheme design.

As introduced in section 1.1 above, the approach centres around the production of ROAMEF (Rationale, Objectives, Appraisal, Monitoring, and Evaluation and Feedback) statements (Guy, 1998, p. 33), which represent the case for support. It is shown that the ROAMEF concept is set out in the Her Majesty's Treasury (HMT) guidance the 'Green Book' (HMT, 1997, pp. 32-33). The 'Green Book' requires the Whitehall departments to adopt the ROAMEF approach, and thus examination of the guidelines to see what work is carried out under each of the ROAMEF headings was recommended as a first step in gaining insights to the design of programmes.

The literature review also refers to the accountability of ministers to the public concerning the activities which their respective departments undertake on their behalf. It is necessary that ministers are able to demonstrate that programmes have secured value for money, and therefore the importance of evaluating the performance of programmes is stressed. Programme evaluation has another very important role. As indicated by Weller and Stevens (1998, pp. 582-583), the results of evaluation can be usefully fed back into the design process, towards ensuring future schemes are better able to meet government objectives (Guy, 1998, p.1). 'Evaluation including Feedback' is then a strategic part of the overall, design process. An initial look at a few evaluation reports prepared by DTI showed them to contain comprehensive information relating to the delivery strategies employed within programmes, and their performance in terms of meeting programme targets. The latter was seen as particularly

important in determining good practice in relation to proposals for improving the process (research objective (c)). Evaluation reports were therefore seen as a valuable source of evidence, requiring them to be investigated as part of the research.

1.4.2 Obtaining a Detailed Description of the Design and Administration Process

Chapters 5 to 8 inclusive describe the detailed research undertaken into the process of designing and implementing support programmes. Together they provide insights into the large number of mechanisms to be involved. The approach adopted was to develop a hierarchical model which would describe the overall process and its component parts. Chapter 5 is concerned with the describing of the overall process, with chapters 6, 7, and 8 providing details of the system components comprising that process.

Chapter 5, section 5.2 explains how a variety of controls act to constrain what officials can and cannot do in running support programmes. Attainment of VFM is a key requirement, and must be demonstrated before programmes can receive approval. The process of development is also constrained by the need to conform to European Commission (EC) policy on State Aids (SA, 1998), UK Legislation, and UK Government Policy. As part of 'policy' it is necessary for officials in designing programmes to first prove the existence of 'market failure', that is, of problems in the functioning of the market which are faced by SMEs and other organisations. Market failure may be defined as a situation in which market forces are not operating in a way which supports the competitiveness of firms, and the root causes of problems cannot be solved by the actors involved (Arnold, Boekholt, and Keen, 1999, p. 19). Not unexpectedly, budgetary limitations place further constraint on the scope of any programme.

Section 5.3 investigates the sources of evidence which are interrogated by officials particularly in identifying instances of market failure. As described earlier, evaluation reports are an

important source of evidence, as they indicate new or continuing problems. Professional journals and other reports are also consulted. In the past, government Advisory Committees have been useful in identifying market failures. Officials also talk to external bodies including Higher Education Institutions (HEIs) and consultants, and to colleagues having experience of operating schemes. People will additionally call on their own experiences. On occasions, officials will commission research studies to investigate potential problems in the market.

Chapter 6 begins the task of investigating the discrete parts of the process as proposed by Weller and Stevens (1998), being concerned with 'Issue Identification'. The author proposes that 'Identification of Issues' is very much about the design phase of the process, and in particular the development of programme ROAMEF statements. The drafting of ROAMEFs is examined in detail in this chapter. It is proposed that the approval of ROAMEF statements be treated as part of programme design, as during the vetting process the initial proposals are often improved upon. Section 6.4.2 shows 'Approval' to be a sequential process consisting of a number of stages and analyses how the process acts to improve VFM.

Chapter 7 investigates the implementation phase of schemes, which is principally about programme administration. The first area to be investigated is the role of monitoring within programmes. Section 7.2 differentiates between two types of monitoring. The first, programme monitoring, is concerned with tracking the overall performance of programmes in order that problems encountered can be quickly corrected. The second is project monitoring, where the progress of individual projects within programmes is tracked to ensure overall scheme objectives are being met.

Section 7.3 analyses the activities which are carried out under the heading of general administration. The activities include such tasks as managing contracts placed with organisations for the undertaking of research projects, and the management of grants. Also researched is the management of consultancy

schemes. Normally external organisations are contracted to run these schemes on behalf of the Secretary of State, requiring measures such as the issuing of scheme guidelines to make sure that contractors adhere to government policy. The use of guidelines is discussed in section 7.4. The role of competitive tendering in securing VFM is studied in section 7.5. The writing of Invitation To Tender (ITT) specifications is described and the procedures of the tendering process detailed. Her Majesty's Treasury (HMT) requirements for the handling of public funds are described in section 7.6. Section 7.7 looks at the steps which officials take to promote programmes and section 7.8 the procedures which can be adopted in closing schemes.

Chapter 8 looks at the subject of 'Evaluation and Feedback'. Section 8.2 pinpoints its strategic role in adding value in the design process by providing lessons from experience. Section 8.3 discusses the planning of evaluations, describing the sequence of events in the evaluation process. That 'Evaluation' is about testing the validity of a programme's rationale, and the efficiency and effectiveness of interventions in meeting objectives is highlighted. The steps involved in 'Evaluation and Feedback', beginning with the setting of objectives in programme ROAMEF statements, are set out. The need to assess VFM is stressed. The development of evaluation methods based on the sampling of programme beneficiaries is also discussed.

Section 8.4 investigates the content of evaluation reports, to provide examples of previously adopted assessment strategies, and show the value of the reports in determining good practice. The corporate organisation of 'Evaluation in DTI is detailed in section 8.5. As a process 'Evaluation' is implemented as a distributed function, with evaluators working in the individual directorates responsible for programme design and implementation. Interestingly it is recorded how DTI annually develops overall plans for evaluation projects across the department, which are approved by the Secretary of State. Chapter 8 saw completion of developing the systems model describing the process of designing and implementing programmes.

1.5 Testing the Model

Having described the process, the next step was to test the integrity of the design model. This was affected by analysing the case study examples to see if the structure of the design process predicted by the model could be identified in their development and operation. The testing of the model is summarised in chapter 9, which found the design model to fit the design process indicated in the case studies. The case study examples are described in appendices D to H. Appendix D (pp. 77-80) describes the Enterprise Initiative (EI), appendix E (pp. 81-94) the Research and Technology (R & T) initiative, appendix F (pp. 95-105) the Consultancy Initiatives (CI), appendix G (pp. 106-126) the Managing into the 90s (M90s) programme, and appendix H (pp. 127-141) the Manufacturing, Planning and Implementation (MPI) programme.

1.6 Identifying Potential Improvements

Having obtained a full description of the current process, it was suggested that the system be again investigated in detail from the perspective of identifying how the design process might be improved. The aim was to discover the areas where deficiencies and problems existed, and consider how shortcomings could be corrected. The fifth research question then was:

(v) "In what areas may improvements be introduced and what should those improvements comprise"?

The literature review, chapter 3, section 3.7 proposes that Business Process Re-engineering (BPR) could be adopted as an approach for finding ways in which to introduce change for improvement into the design process. As part of the re-engineering exercise it is further suggested that the introduction of knowledge management to raise the efficiency with which the design process is undertaken also be investigated. Following growing practice in the private sector, ways of helping DTI and other government departments in becoming learning organisations through effective knowledge management

was seen as a vital. Research, it was suggested, should therefore investigate what features of knowledge management are required to help departments become learning organisations.

Chapter 10 describes the detailed work which was undertaken in drafting proposals for improving the process. Based on a BPR approach, section 10.4 reviews the current process and makes recommendations for correcting identified deficiencies. Section 10.5 develops the findings and investigates how knowledge management can be introduced to bring further improvements. One of the recommendations is that a *Handbook for Programme Design and Implementation* be produced, which advises officials on good and bad practice in programme design and administration. Proposals for the new Handbook are seen as meeting the third research objective (c). Towards the preparation of the guidance, appendix K (pp. 158-187) investigates good and bad practice derived from analysis of running schemes within DTI. Analysis centres around the assessment of programme performance as described in the evaluation reports prepared in regard of the case study examples described in appendixes D to H. Finally, chapter 11 records the conclusions drawn from the research.

1.7 Developing the Research Strategy

Chapter 4 details how the research method was developed for answering the research questions (iv) and (v). In developing the strategy it was seen as important to identify a set of approaches which would enable the right information to be collected, such that the research questions could be addressed, and for conclusions to be drawn such that the research objectives were achieved. Chapter 4 describes how an ethnographic approach, using the case study method, was adopted as the basis for the research strategy.

The reasoning behind the choice of research approach is set out. In deciding upon the underlying approach of the research strategy, the author was faced with the choice of adopting a principally 'deductive' or 'inductive' method. Chapter 4, section 4.3 discusses the arguments involved. It was argued that the subject of the author's research was essentially one of the 'social world', and that an

inductive, anti-positive approach was considered more fitting for meeting the objectives of research. Whether to adopt an ethnographic approach as against employing action research techniques is then debated in section 4.5. A strategy based on the use of ethnography was argued to be better suited to the author's situation. Ethnography with its emphasis on building an understanding of the behaviour of subjects, through observing the actors concerned from the perspective of being a member of their community, would allow the author to capitalise on his position within DTI (Gill and Johnson, 1997, pp. 112-114). Many researchers commend ethnography as an important means of gaining access to events and groups that are otherwise inaccessible to scientific investigation (Yin, 1994, p. 88).

Section 4.6 discusses the specific research methods which were adopted. The importance of being able to 'triangulate' different sources of evidence is stressed. Research based on case studies is proposed as best fitting the research problem. An important consideration, however, is whether to adopt a single or multiple case strategy. Initially it was thought that the research subject should be treated as a single case study, but this is rejected in favour of a multiple case approach. As the identification of best practice was a primary concern of research, a multiple case approach seemed more fitting. An additional consideration in favour of adopting a multiple case study strategy was that it would promote the collection of evidence from several sources and support the process of triangulation.

Section 1.4.2, above, described the development of a hierarchical model to describe the process of designing and administering programmes. Chapter 4, section 4.6 discusses that it was decided to deploy a modelling technique called IDEF, (IDEF is the acronym for Integrated DEFinition Methodology , which was developed by the US Air Forces ICAM Programme (Wisnosky and Batteau 1990, p. 8; Ranky, 1990, pp. 18-19; Peppard and Rowland, 1995, p. 172).

1.8 Collecting the Evidence

Chapter 4, section 4.7 discusses the strategy for conducting the case study research to obtain the information required to model the design process. Three underlying principles are identified as requiring to be in place:

(i) use multiple sources of evidence;

(ii) establish a case study database;

(iii) ensure the existence of a chain of evidence.

For (i), section 4.7.1 proposes that a number of types of data source be interrogated for gathering evidence. Examples are documents, interviews, and participant observation. With respect to (ii), section 4.7.8 describes the formation of a case study database, which included the filing of interview records, and observations made during the course of attending official meetings. Arrangements to ensure the building of a 'chain of evidence' (iii) through clear cross referencing are detailed in section 4.7.9.

1.9 Generalisability of Research Findings

Although research would focus on the design of support policy within DTI, it was necessary to ensure that the research results would be applicable more widely in the public sector. If the results could not be widely exploited, then an essential element of the rationale for undertaking the research task was seen to be severely limited. There would be little interest within the wider community in the research outcomes if they could only be usefully applied within DTI. The sixth and final question for research to answer was posed as follows:

(vi) "What scope is there for exploiting the results of research beyond DTI"?

The question, in fact, must be asked in two parts. First is the issue of whether the research method is likely to provide results which are generalisable. The second is whether the process of designing and administering programmes in DTI is typical of procedures adopted elsewhere.

Regarding the first point, concerns are often expressed in relation to case studies over the ability to generalise from their findings (Yin, 1994, p. 10; Gill and Johnson, 1997, pp. 119-121). Many of these concerns stem from the generalisability of theories derived from case studies, but the author suggests that his research is about exploring and describing phenomena rather than deriving causal relationships. Stake (1995, p. 7) acknowledges that usually in case studies only a small number of cases are normally investigated but, he argues, these are studied in depth and people can still learn much which is generalisable. The argument is discussed in chapter 4, section 4.8.1. The author argues that much of what happens within DTI is common to the other Whitehall departments, and the observations made from examining the case studies described in this thesis should therefore apply more widely within government. Section 1.1 above introduced the role of the Treasury 'Green Book' (1997), which gives rise to a uniformity in approach across Whitehall, by requiring departments to adopt the ROAMEF approach in programme design and operation. This is discussed further in chapter 3, section 3.3.1. Chapter 9, section 9.3 continues this discussion, and considers the potential to exploit the findings of research more widely, by governments elsewhere.

1.10 Selection of Case Study Examples

DTI has run a large number of programmes over the years, and its history of programme development stretches back into the days of the former Ministry of Technology (MinTech) [Interviews 1 and 2] (Ernst & Young, 1990, p. 1). Obtaining an exact number is difficult, but the author estimates that the figure lies in the 'several hundreds'. For the purposes of this research it was considered impractical to attempt to review all these schemes. Instead it was decided to target activities operated under the umbrella activity of the Enterprise Initiative (EI). EI covered the period of 1988 to 1994 and is regarded as one of DTI's highest profile initiatives, featuring prominently in the government white

paper *DTI - the department for Enterprise* (HMSO, 1988, p. 41). Although primarily a vehicle for promoting DTI's services to business, the resource expended on ensuring its success is felt to have been sufficiently great for EI to be treated in this research as a case in its own right.

A number of programmes operated under EI, and of these, the author regards the Research and Technology (R & T) Initiative, the Consultancy Initiatives (CI), the Managing into the '90s (M90s), and the Manufacturing, Planning and Implementation (MPI) programme, as having been the most strategic and influential, and that these should therefore represent the remaining four cases for research to focus upon. A further advantage seen in concentrating on these examples is that they are sufficiently recent for documentation to be readily available and for the people associated with their introduction to still be likely to be available for interview. Sufficient time has also elapsed since their introduction for evaluatory work to have been undertaken by the department's assessors. Although the case study examples were central to the research, the author took the opportunity to consider some schemes prior to and post EI.

To summarise, this chapter has defined the subject of research as the investigation of the process of designing and implementing programmes in government, that are aimed at helping firms to become more competitive. It has been argued that the research falls within the domain of public policy and administration. The research objectives have been defined, and the research questions to be asked have been put. To help the reader in gaining an understanding of the research topic, the next chapter, chapter 2, provides some useful background to the design process. Some of the historical factors which have influenced the design process, and a number of the commonly used terms, are explained.

CHAPTER 2

BACKGROUND TO THE DESIGN AND ADMINISTRATION OF SUPPORT POLICY WITHIN THE DTI

2. BACKGROUND TO THE DESIGN AND ADMINISTRATION OF SUPPORT POLICY WITHIN THE DTI

2.1 Introduction

The purpose of this chapter is to explain to the reader certain elements which contribute to the culture of designing and administering support programmes in DTI. In so doing it is intended to help the reader understand the content of this thesis, by introducing commonly used terms and the historical background which has influenced the way in which the process is conducted. Such explanations are also regarded as helpful, as they enable observations to be interpreted by the reader from a similar perspective as that held by the civil servants involved (Gill and Johnson, 1997, p. 96).

Explanations begin in section 2.2 below, which discusses the use of the terms 'initiatives', 'programmes', 'schemes', and 'projects', and the relationships with overall policy making. Section 2.3 discusses the structure of financial administration in the running of schemes, and section 2.4 introduces the three sets of primary guidance which are available to officials engaged in the design process. Section 2.5 outlines the changes in policy in recent years towards the support of businesses, and here the opportunity is taken to discuss the government's move towards a less interventionist stance. Finally section 2.6 provides an outline of the grade structure within DTI.

2.2 Policy, Initiatives, Schemes, Programmes, and Projects

Reading the literature and listening to the conversations of officials, the author has observed that the above terms are often used interchangeably when discussing the development and administration of activities to support industry and commerce. The author himself is as guilty as anyone! It is therefore important at this stage to be clear as to what is meant by each term in the context of this research.

Firstly 'policy'. The author discussed how policy development may be defined with Dr. Peter Bentley (Director of Finance in DTI's Business Link Directorate) who is an experienced, senior official in the area of policy design. He took the view that policy design could be divided into two levels. At the macro level the process is concerned with developing overarching government policy covering such topics as 'Competition', 'Nationalisation of Publicly Owned Industries', and to 'Support Industry and Commerce'. At the lower, detailed level, design of policy is about the design and administration of interventions which enable the government to realise its macro policy objectives. In Dr. Bentley's view, it is this latter area with which officials engaged 'at the coal face' are primarily concerned.

The author agrees with Dr. Bentley's descriptions of the two levels of policy activity, and emphasises that it is that element of policy making which is primarily concerned with the designing of strategies which deliver ministerial objectives; that is programme development, which is the focus of the research recorded in this thesis. Others adopt a similar stance. Guy (1997, pp. 1-3) in discussing evaluation of policy, adopts a model which centres around the role of policy making as being essentially about the development of programme strategies for delivering overall, policy objectives. Guy (1997) usefully refers to programme strategies as 'support policy', and for the purposes of this research the author has adopted this context to describe the subject of interest of his research. That is, research of support policy related to the design and operation of programmes that help firms in industry and commerce to improve their competitiveness.

It is important at this stage to discuss the terms 'initiative', 'programme', and 'scheme', as in the public sector they are often used to mean the same thing. DTI's *Innovation Budget Guidelines* (DTI, 1999a, p. 19), which are concerned with Research and Technology (R & T) funding, define a scheme as "*a broad area of related activities*", and a programme as applying to a specific subject area within an 'umbrella' scheme. Within a programme, the guidelines continue, there will be a number of projects, and the government's LINK scheme is given as an example of the 'scheme', 'programme', 'project' hierarchical structure.

Unfortunately, in actual practice the above convention is not universally adhered to. For example, in the SMART (Small Firms Merit Award for Research and Technology) activity in which SMEs may receive grants for R&D projects, the activity which contains no programmes is referred to as the SMART scheme, rather than a programme. In the previous Consultancy Initiatives (see appendix F, pp. 95-99) the term 'initiative' described a set of programmes under which firms could receive funding towards consultancy work. The Regional Supply Office programme involves no funded projects at all, being about supplying firms with information related to purchasing. In contrast the Business Link activity, which again centres around helping firms obtain information, is referred to as an 'initiative'. For the purposes of this research the author has decided that the terms 'initiative', 'scheme' and 'programme' be used interchangeably, and be used to describe a policy heading which serves as an 'umbrella' under which a number of related activities take place.

For the purposes of this research, schemes within DTI can be broadly divided into the two categories of 1) Research and Technology (R & T) programmes, and 2) advisory schemes. R & T programmes are concerned with encouraging organisations to embark on technology related projects, such as those which involve R&D and technology transfer. Examples of schemes promoting R&D in firms are the SMART (Small firms Merit Award for Research and Technology) and SPUR (Support for Products Under Research) programmes. An example of a scheme for which the promotion of technology transfer is the principal theme is the BIOWISE programme. Advisory schemes are concerned with providing firms with the information they need to become more competitive. They can be divided into three further programme types. The first concerns 'awareness' programmes which aim at encouraging firms to adopt best practice in their business operations by raising their awareness of the business issues which they face.

Second are consultancy schemes which aim to plant good management practice into SMEs by encouraging them to use external expertise, usually consultants, to help them implement programmes for change. Third are schemes such as the Business Link Initiative, which aim to provide firms with

access to the broad raft of business information they need to become and remain competitive. appendix E provides case study examples of R & T Programmes. Appendices F, G, and H provide examples of advisory activities. Figure 2.1 below describes diagrammatically the structure of programme support.

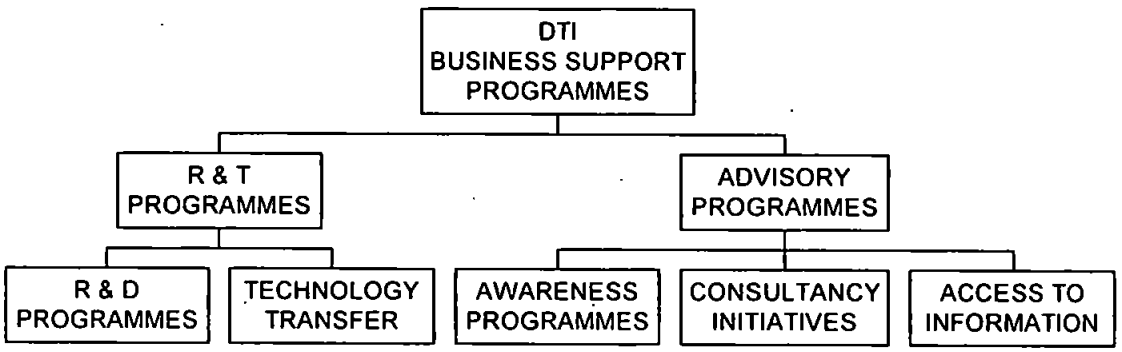

Figure 2.1 The Programme Support Structure.

2.3 Financial Administration of Programmes within DTI

Discussion of the financial arrangements within DTI to administer programme expenditure must be set in the context of the wider need for the department to ensure that it spends its overall budget wisely, and manages its affairs efficiently. In turn, the systems that have been installed in DTI to manage expenditure effectively, must be viewed in the light of Treasury requirements for departments to achieve value for money (VFM) in spending public funds.

The Treasury guidance *Government Accounting* (HMT, 1999) sets the scene. Guidance begins by informing the reader that the Crown, "*being the executive power, is charged with the management of all the revenue of the State, and with all payments for the public service*", (chapter 1, section 1.1 paragraph 1.1.1). The guidelines continue by referring to the Crown acting with advice from its responsible ministers, making known to the House of Commons the financial requirements of the government. In return the Commons grants supplies, and the ways and means to meet them through taxes. The participation of the House of Lords the guidance advises, is confined to "*assenting to such*

financial provisions of the Commons as require statutory authorisation", (paragraph 1.1.1). Summarising, the guidance states: "*thus the Crown demands money, the Commons grant it, and the House of Lords assent to the grant*" (HMT, 1999, paragraph 1.1.2).

The pivotal role of the Treasury in implementing the collection and appropriation of government revenues is indicated through inspection of *Government Accounting* (HMT, 1999). The guidelines advise that "*within Government, the central responsibility for financial relations with Parliament falls to the Treasury*" (paragraph 1.2.1). Guidance points to the Treasury Officers of Accounts, who were "*first appointed in 1872 to assist and advise officers who rendered appropriation accounts upon all technical points concerned with book-keeping and accounts*" (paragraph 1.2.2). Attention is drawn to their duties from the beginning being closely linked with the development of the system of parliamentary control of expenditure, including the accounting and audit arrangements to secure that control (paragraph 1.2.2).

Lipsey (2000, pp. 15-16) develops the discussion. He refers to the twin functions of the Treasury of running the economy and the control of the overall level of public spending, both of which are essential to any system of government. Here he comments that Britain, like France, is unusual in placing responsibility for both economic policy and public finances in a single institution, (Lipsey, 2000, p. 81). Historically, the former role majored on the development of macroeconomic policy, including fiscal and the related monetary policy. However recently, Lipsey proposes, the importance of macroeconomic policy has declined, as people have questioned the Treasury's ability to influence events such as to smooth out economic fluctuations (p. 16). Emphasis instead has shifted towards providing a stable framework for economic policy, concentrating on the microeconomic factors such as the promotion of competition, (see section 2.5 below).

Turning to the second area of responsibility, Lipsey suggests the Treasury's function in controlling government expenditure is necessary as spending levels are now too high to allow individual

departments control, albeit that they are subject to parliamentary oversight (p. 16). Interestingly he suggests that the origins of the Treasury, and in particular its control over finance, can be traced back over nearly one thousand years; before the Domesday Book (p. 1). As the controller of government expenditure the Treasury enjoys a position of power and influence in Whitehall that has been built up over many years (Lipsey, 2000, pp. 1-10, 174). Rhodes (1988) usefully summarises the role of the Treasury as:

"*The 'guardian' interest is enshrined in the Treasury. It negotiates with the service and lead departments the level of central funding of current expenditure through grants and the total ceiling on capital expenditure*",

(Rhodes, 1988, p. 105).

Lipsey (2000, p. 174) highlights that no department can implement a new policy involving expenditure without Treasury approval. Individual items of spend over specified levels are also subject to the Treasury's consent (for an example in the Department of Trade and Industry see chapter 6, section 6.4.4 of this thesis). They cannot, Lipsey proposes, spend more without Treasury's official licence. In theory, Lipsey observes, expenditure levels are agreed between each of the individual departments and the Treasury, with the departments and their ministers defending their proposals against criticism in negotiations. However he likens 'control' "*to the language of war*" (p. 170), in which suggests Lipsey, "*the Treasury holds the whip hand*" (p. 174). He records departments viewing the Treasury as 'all powerful', and seemingly holding all the cards (pp. 142-143). Lipsey (1999, p. 141) relates the prime motivation of the Treasury's spending controllers to contain expenditure, to them viewing themselves as the taxpayers' representative in government, acting to limit the spending instincts of the Whitehall departments. Some see the Treasury's role to be to examine and resist proposals for greater expenditure from the spending departments.

Lipsey (1999, p. 148) suggests that in reality the Treasury does not seek to mount a large scale assault on public spending, as it believes that it would be politically impractical to do so. He highlights for

example the interventionist policies enacted in the post-war years that have generally failed (p. 145). Rather the Treasury seeks to hone the growth of public spending. Lipsey proposes that the Treasury is not necessarily hostile to spending. The three criteria of economy, that is that everything should be carried out as cheaply as possible, efficiency (the minimisation of waste), and effectiveness (policies designed with clear objectives and wherever possible measurable outcomes), if met, give grounds for expenditure (pp. 141-142). Detailed discussion of how the latter criterion is achieved in relation to programme development, is contained in chapter 6, sections 6.2 to 6.3.6, and chapter 8, sections 8.2 to 8.3).

The government white paper *Efficiency and Effectiveness in the Civil Service* HMSO (1982), reflects the desire to see arrangements put in place to achieve economy, efficiency, and policy effectiveness, in every aspect of departmental business. The paper sets out a number of actions to be undertaken by government departments to improve the management of resources within Whitehall. The efficiency measures described in the white paper provided a framework for better resource management and are essentially still in place today. This framework of measures has therefore set the management environment for policy development during the entire period covered by this thesis. Under the heading of "Financial Management", the white paper HMSO (1982, pp. 5-6, 21-27) details the aims of the Financial Management Initiative (FMI). The objective of FMI is set out below:

"*The aim of the financial management initiative is to promote in each department an organisation and system in which managers at all levels have:*

a) a clear view of their objectives and means to assess and, wherever possible, measure outputs or performance in relation to those objectives;

b) well-defined responsibility for making the best use of their resources, including a critical scrutiny of output and value for money;

c) *the information (particularly about costs), the training and the access to expert advice that they need to exercise their responsibilities effectively*",

(HMSO, 1982, p. 5)

Of the above aims, it is (a) and (b) which are of particular interest to this research. Objective (a) is essentially about evaluation of policy, which is discussed in chapter 8. Objective (b) is, as suggested by its description, very much about ensuring value for money and the establishment of systems to help good value to be achieved.

The white paper HMSO (1982, p. 5) refers to departments being called upon to examine the way they manage all aspects of their programmes, and to work out the best pattern of managerial responsibility, financial accounting and control. Within DTI, the set of guidance called the DTI *Finance Handbook* (DTI, 1996b) was introduced in response to the Paper. Representing the primary source of reference in developing and administering interventions, the *Finance Handbook* (DTI, 1996b, section 2.1, paragraph 2.1.2) describes the structure and operation of the financial management systems which were put in place to meet the white paper's requirements. The DTI *Finance Handbook* (DTI, 1996b) makes clear that the principles of FMI apply to DTI, stating that "*economy, efficiency, effectiveness and value for money now underpin everything we do*" (DTI, 1996b, paragraph 2.1.2). The purpose of the research was to take a detailed look at what officials '*do*' in the area of developing policy for support programmes to achieve value in the design and implementation of support policy.

The DTI *Finance Handbook* (1996b, section 3.1, 3.2) shows how in the department overall strategic control of the management systems, which are aimed at ensuring that the department's resources are administered effectively and efficiently, is the responsibility of the Departmental Management Group (DMG). Chaired by the Permanent Secretary, its other members comprise the Chief Scientific Advisor to the Government, the Directors General (formerly known as Grade 2 staff), and the Director, Finance and Resource Management. Heads of other management units attend when topics with which they are directly concerned are on the DMG's agenda. The Financial Resource Management (FRM) Directorate provides the secretariat.

The *Finance Handbook* (1996b) describes the strategic nature of DMG's role, stating:

"*DMG takes decisions on and monitors resources for the Department as a whole. It therefore takes responsibility for ensuring that systems designed to promote efficiency, economy and accountability are in place throughout the Department and are working satisfactorily. It also deals with issues that affect the whole Department or cut across a number of different Commands*",

DTI (1996b, paragraph 3.1.4)

The *Finance Handbook* DTI (1996b) also describes the role of the Departmental Strategy Group (DSG). Chaired by the Permanent Secretary, the DSG has responsibility for considering the wider policy objectives of the department and co-ordinating detailed policy, such as the introduction and operation of individual programmes, to ensure that they are supportive of wider policy goals. The agenda for DSG is described as being driven by the Permanent Secretary with the assistance of the Director of the Central Policy Unit (CPU). Other members include the Chief Scientific Advisor, the Directors General, the Chief Economics Advisor, and other directors when issues relevant to them are being discussed.

2.4 DTI Guidance Available to Officials on Programme Development

In analysing the process of designing support policy, the author observed that three documents form the principal source of guidance to officials, these being the H M Treasury 'Green Book' (HMT, 1997), the DTI *Finance Handbook* DTI (1996b) discussed above, and successive versions of the *Innovation Budget Guidelines*, the latest version used for drafting this thesis being circulated in 1999 (DTI, 1999a). Inspection and comparison of these documents shows that, from the perspective of providing advice on how to design policy for the introduction of support programmes, the *Innovation Budget Guidelines* (1999a) are the most comprehensive source of guidance in the development process. From his experience, the author is also able to state that they are additionally the most widely referenced. These observations are discussed in

greater detail in chapter 10, sub-section 10.4.1. In charting the design process, emphasis has been placed on analysing the contents of the *Innovation Budget Guidelines* (1999a).

Reflecting policy developments within the department, the *Innovation Budget Guidelines* (1999a, p.7) have been given a number of specific titles over the years, but have remained focused on promoting innovation using funds drawn from DTI's Innovation Budget. To avoid confusion this title has been adopted in this thesis to cover all versions of the guidance. Both the DTI *Finance Handbook* (1996b) and *Innovation Budget Guidelines* (1999a) are restricted in circulation to officials within DTI and are not normally available for public inspection.

2.5 Changes in Government Policy for Supporting Companies

Study of government white papers and the various issues of DTI guidance to officials on programme development shows how in recent years there has been a shift in emphasis in government policy away from funding both large and small companies towards supporting primarily SMEs. In the Research and Technology (R & T) area, policy has moved from encouraging the development of new products to one of placing greater emphasis on prompting firms to make more use of the 'new' technologies already existing in the marketplace. In latter years greater emphasis has been placed in policy making on aiding the dissemination of business information and technology transfer. This practice appears to have been widely adopted within the European Union and the national governments of the member states (Clark and Guy, 1998, pp. 380-390). Promoting innovation has also become a key objective of the UK Government (DTI, 1999a, pp. 9-11) and more widely across Europe (Clark and Guy, 1998, pp. 389-390).

These changes may be seen in the context of the UK Government adopting a less interventionist stance. Professor Coates, in *Industrial Policy in Britain* (Coates, 1996, pp. 4-7), 'sets the scene' for discussion. Coates (1996, p. 6) proposes that since 1945 there has been an on-going debate relating to industrial policy between a broadly 'social democratic' strategy centred around creating,

supplementing and managing the market, and a neo liberal one organised around defending the market. Coates (1996) continues by suggesting that now debate has developed into a 'tussle' between the liberal position and those who take an 'interventionist' stance advocating policy to shape the market. In the case of the latter, he records the view of liberal economists and policy-makers who "*have advocated (and continue to advocate) a very specific and highly restricted role for the state and its dealings with industry*" (Coates, 1996, p. 6). However interestingly, Lipsey (1999, p. 3) suggests that it is not the first time that a non interventionalist stance has been adopted in the UK, nor is it a relatively recent phenomenon. He points to Gladstone's seven years as chancellor from 1859 to 1866, and the Treasury's instinct for austerity being "*reinforced by the doctrines of the economic liberals, who were the apostles of free markets, and low state spending*" (p. 3).

The argument put forward by the 'liberals' for adopting a non interventionist policy centres around the characteristics of markets to act as a powerful incentive for actors to work efficiently to survive, to develop new products and services, to work with each other in complex decision making in the economy without intervention, and allow people greater freedom of choice (Coates, 1996, pp. 6-7). The task of government is to create an environment in which markets can function effectively. These views, Coates suggests, have been dominant in the Conservative Party since 1979, the year of their election to government, and have now become ingrained in political thinking. Hover and Plant (1989), refer to governments in the UK and the United States wishing to limit the state's role in relation to industrial policy.

Richards and Smith (1997, pp. 62-69) take up the debate reviewing the resultant policy changes within the DTI. They argue that the previous 'Heath government' was predominately interventionist, with the Conservative's introduction of the Industry Act of 1972 (p. 67), (see chapter 5, section 5.2.2 of this thesis) heralding a more interventionist period. Richards and Smith (1997, p. 67) quote a former Permanent Secretary (name withheld) as saying that the industry culture within DTI has been one of intervention, lending assistance to firms and areas of the Country which have experienced difficulties.

They suggest that the ethos in DTI has been very much about sponsoring and advocating the interests of industry; a view with which the author is able to agree.

Richards and Smith (1997, pp. 67-68) suggest the appointment in 1979 of Sir Keith Joseph as the Secretary of State (SoS) for Trade and Industry saw the beginning of change within DTI. Reflecting the 'laissez-faire' predilection of the then Prime Minister, Lady Margaret Thatcher, a process of disengagement from industry was embarked upon (Richards and Smith, 1997, p. 68). However the author proposes that it was Lord Young, when he was DTI's Secretary Of State (SoS) who implemented the most significant changes. Richards and Smith (1997, pp. 68-69) concur, recording how Young 'harnessed and crystallised' the change in political direction, re-naming the department in 1988 as 'The department for Enterprise' and refocusing its activities on extending the free market and wealth creation. Richards and Smith (1997) refer to Young's commitment at the time to reduce government intervention and "*civil servants and ministers telling industry what to do*" (Richards and Smith, 1997, p. 68).

The impact of recent Conservative Government thinking on industrial policy is evidenced in the January 1988 government white paper *DTI - the department for Enterprise* (HMSO, 1988, pp. 1-5, 6-7, 22-27, 33-37, 41). The white paper refers to the government building on its work which began in 1979 towards creating open markets (pp. 6-7). Towards achieving their aims, a number of the nationalised industries had been returned to the private sector through privatisation. Publication of the white paper saw significant change in the government's policy towards helping business, and in the author's opinion was a landmark document which set the scene for policy development within DTI ever since. For example, the present Labour Government has continued using many of the microeconomic tools employed by the previous Conservative administration, such as the promotion of competition, free trade and the better working of the labour market, (Lipsey, 2000, p. 16), (see also section 2.5.2 below). It is worth noting that, based on information received by the author from senior colleagues, the drafting of the Paper was very much Lord Young's 'baby', and reflects much of his thinking discussed above.

Often referred to by officials as the DTI White Paper, the document (HMSO, 1988) set out the new policies and organisation of DTI. The Paper also referred to the need for further changes in the future, as DTI adjusts to reflect changes in the business environment and evaluates the effectiveness of its policies. The Paper then continued, "*But any changes will be made within the framework of the coherent and consistent rationale summarised in the objectives described in this paper*" (HMSO, 1988, p. 41). The changes in ministerial policy which have most affected the area of designing support schemes covered by this research are summarised below.

2.5.1 The Support For Innovation Scheme

The author, having joined DTI in January 1985, witnessed many of the changes wrought by the DTI White Paper (HMSO, 1988, pp. 33-37). When he first joined DTI, the author spent much of his time identifying R&D projects to be supported through the award of grants under the department's Support For Innovation (SFI) scheme. At this time and until 1988, whilst emphasis was placed on smaller firms, no upper limit was placed on the size of company who was eligible to apply for funding. No distinction, for instance, was made between companies which were totally independent, and those belonging to groups of larger, multinational organisations. A view often expressed to the author was that smaller firms who were members of large company groups could be 'starved' by the headquarters operation of the necessary cash to fund project work, and in consequence were no better placed than independent SMEs to resource project work.

The DTI guidelines (which are undated but from the author's experience would suggest a drafting date of circa 1987) for awarding grants under SFI, *Innovation Support For Business: Guidelines For Officials* DTI (1987) describes the support available under the Scheme. In the introductory section it states that SFI "*may be provided for both manufacturing and service industry projects. It is directed principally at applied R & D projects and is only available exceptionally for basic research*" (DTI, 1987, "Introduction", paragraph 1.2).

The SFI guidelines continue by describing the types of projects which are eligible for grant funding. These included up to 25% funding of single company projects where the total project costs did not exceed £500K. For collaborative projects involving applied research up to 50% of total costs was made available, but 25% in the case of projects for which development was the subject of the work. No reference to company size is made. However circumstances changed with the introduction of the DTI White Paper (HMSO, 1988) as discussed below.

2.5.2 The DTI White Paper

As introduced in chapter 1, section 1.1, study focused upon schemes introduced as a result of the DTI White Paper, that is *DTI - the department for Enterprise* (HMSO, 1988). Thus the DTI White Paper is significant for the research described in this thesis, as the policy described in this document shaped the schemes which were the subject of investigations. The white paper sets out the background to change. In its introductory chapter, (p. 3) the white paper advises that DTI's budget had fallen by more than a quarter since 1979/80 and that the balance of funding had shifted. Most of the reduction in budget was attributed to a decline in support for the nationalised industries, whilst spend on innovation had been substantially increased. The loss of the 'enterprise nation' and with it economic decline in the UK is cited as the rationale for change. Whilst acknowledging improvement in the UK's economic performance since the Second World War, the white paper draws attention to our growth rate being below that of the United States, Germany, France, Italy, Sweden, and Japan, (HMSO, 1988, p. 1). The reasons for poor economic performance were 'laid at the door' of an education system which discouraged young people from developing business careers and neglected the skills of management and innovation. The unavailability of suitable training for the majority of people in the workplace was also cited as a further factor preventing the UK from realising its potential, (p. 1). Poor industrial relations and corporatism were blamed for hampering the ability of the Economy to change and adapt.

Nineteen Seventy Nine was regarded as a "*major turning point*" (p. 2) and the white paper (HMSO, 1988) continues by describing other changes which had taken place since then to improve the Economy. The Paper highlighted the government's twin aims of reducing inflation and the encouragement of enterprise, and reported improvement in the climate for both wealth creation and enterprise. For example, inflation was seen as being under control, and changes in the tax system had restored incentives for individuals. Venture capitalists had returned to the marketplace and deregulation and competition had provided greater scope for businesses to develop.

Success of policies were demonstrated by instances such as the UK having become second to Japan in terms of growth in Gross Domestic Product (GDP), and top in terms of productivity growth, since 1981. Enterprise was also cited as an example of improvement in the Economy, with the net number of businesses increasing by an average of 500 firms a week, since 1979. The DTI White Paper (HMSO 1988, p. 2) then drew attention for the need to continue with the pursuit of improvement. Although productivity growth in the UK had been high, the nation's productivity was described as remaining between a third and a half that of competitor nations. Several underlying causes for continuing poor performance were listed. Spend on R&D by the private sector was seen as a smaller proportion of GDP and growing more slowly in the UK than elsewhere. Skills and training of employees were lower than in the main competitor economies, and the enterprise culture and the efficiency and competitiveness of both industry and commerce were seen as requiring further encouragement.

Open markets and individuals were described as the foundations of government policy to address problems. For the former, continuation of competition policy (e.g. competition law including monopolies, referral of mergers to the Monopolies and Mergers Commission (MMC), and restrictive trade practices), privatisation, deregulation, and international trade negotiations, were stated as the primary means for creating open markets. In the case of the latter, and the area of interest to research, among DTI policies mentioned to help drive up competitiveness of firms was raising peoples' skills,

particularly in management, and the introduction of new DTI initiatives encouraging self-help in companies.

Turning to future spend in DTI, the white paper stresses that many of these policies do not require government spend, for example, competition and deregulation. Whilst implying a role for government in improving the Economy, the 'non interventionist' stance of the government was also portrayed. The paper states:

"*The underlying theme of spending is to improve the functioning of the markets, to avoid taking decisions which should be taken by the private sector, while contributing positively to economic activity*",

(HMSO, 1988, p. 3).

The white paper continues by illustrating how the government, and in particular DTI, will improve the Economy by helping firms raise their competitiveness. The importance of firms having sufficient information relating to business opportunities and problems to make reasoned, strategic business decisions is emphasised. The paper emphasises that "*The need to transfer information underpins a whole range of DTI policies and spending*" (HMSO, 1988, p. 3). Future policies were to be focused on improving management skills in strategic decision making by broadcasting information on best practice and raising awareness of the value of seeking external, business advice. Transfer of technology into firms was also described as a key component of policy, technology transfer being seen as having potential to increasing competitiveness and thus an important activity for management in business to undertake. Reference to the key role of 'information' was again made, with the white paper stressing the importance of future policy focusing on encouraging collaboration between businesses and research institutions. DTI's role to act as a catalyst for technology transfer by providing information and encouraging firms to try new approaches was emphasised (p. 3).

The decision to substantially increase spend on consultancy services for SMEs is stated, and a shift in spending emphasis within programmes described. With reference to the latter, the DTI White Paper (HMSO, 1988, pp. 3-4) announced a move away from single company funding for R&D projects, in favour of placing emphasis on collaborative research and technology transfer. A notable exception was the SMART scheme, on which funding was to be increased, (p. 37). Suspension of support for development work in R&D projects was also signalled, in line with the government taking a less interventionist position. The white paper argued that:

"*Firms themselves are best able to assess their own markets and to balance the commercial risks and rewards of financing R & D and innovation. The Government should not take on the responsibilities which are primarily those of industry*",

(HMSO, 1988, p. 33).

The DTI White Paper also indicated a shift in emphasis from helping companies in general to focusing on helping Small to Medium Sized Enterprises (SMEs), (p. 3). An SME was defined as an independent firm employing less than 500 staff. In later years this figure was reduced to companies employing less than 250 people (DTI, 1996a, p. 16)).

2.5.3 Research and Technology Programmes

The white paper continued by concluding that 'near-market' research or development leading directly to the introduction of commercial products should not be the responsibility of government to fund. Instead it was argued that reliance on the decisions of firms may result in levels of innovation which fails to maximise the Country's potential, therefore DTI's future innovation policy should focus on longer term, collaborative, 'away from the market' research (HMSO, 1988, p. 33). From his own experience of appraising applications under the previous SFI scheme, many of the projects funded involved the development of products ready to be released into the market. Under the revised conditions imposed by the white paper, such applications would have been judged ineligible for

funding. Indeed the author had experience of one, single company application which failed to gain approval before the Paper was published, and was immediately rejected despite considerable effort having been put into develop proposals.

The 1988 version of the *Innovation Budget Guidelines* (DTI, 1988), prepared immediately after the publication of the DTI White Paper, reflects the changes in policy. For the first time the guidelines refer to the Research and Technology (R & T) Initiative, which was launched shortly after publication of the white paper (HMSO, 1988). In discussing the support available under the R & T Initiative the guidelines state:

"*Support is limited to collaborative rather than single company projects, in order to encourage those arrangements, both between companies and between companies and universities and like bodies required for the greater exploitation of scientific and technological advances in the UK.*",

(DTI, 1988, paragraph 2.8).

The guidelines (DTI, 1988, paragraph 1.5) continue by emphasising that support provided under each of these umbrella schemes must be primarily focused on pre-competitive, 'away from the market' research. Eligibility for funding was restricted to independent firms employing less than 500 people. The R & T Initiative is discussed in appendix E.

2.5.4 New Schemes announced in the DTI White Paper

The white paper heralded the introduction of a new range of business support initiatives, referred to collectively as the Consultancy Initiatives (CI). The Paper (HMSO, 1988, pp. 24-27) describes the aim of CI as being to address the perceived lack of management skills in Small and Medium-sized Enterprises (SMEs) by providing firms with support to encourage them to use outside consultancy services to help them develop their management skills. Six initiatives, each covering a specific business topic such as 'Design' and 'Marketing', were announced. CI is discussed further in

appendix F.

2.5.5 Co-ordinating Business Support

With the objective of making DTI's support more accessible to people, publication of the DTI White Paper saw the launch of the Enterprise Initiative (EI), which acted to co-ordinate DTI's schemes. The Paper set out the role of EI as being to bring together the department's services for industry and commerce, offering a range of initiatives to help businesses innovate and become more competitive (HMSO, 1988, p. 41). Brigading DTI's services included bringing together support for R&D work, consultancy schemes, and awareness activities. The role of EI is discussed in greater detail in appendix D.

2.5.6 Policy Developments post the DTI White Paper

A sequence of government white papers has followed the publication of the DTI White Paper. In discussing governmental functions, they have tended to be broader in focus, looking at activities across the Whitehall departments rather than an emphasis on the role of DTI. Publication of these papers has seen the emergence of 'competitiveness as an overriding theme, with publications referred to within government as 'The First Competitiveness White Paper', 'The Second Competitiveness White Paper', 'The Third...', and so on. Each has built on the themes introduced in the DTI White Paper, an approach which has substantially continued under the present Labour Administration (The Stationery Office, 1998). A further feature of the white papers introduced by the previous Conservative Government is to use these documents to report progress on meeting policy objectives set out in previous issues, as well as setting out new and revised policies.

The *Innovation Budget Guidelines* DTI (1996a, p. 8) refers to three white papers published since the DTI Paper which have set out the broad policy aims that DTI aims to achieve in the areas of Innovation and Technology. They are:

- *Realising our potential* (The Science, Engineering and Technology White Paper), (HMSO, 1993), the first Competitiveness White Paper,
- *Competitiveness – Helping Business to Win*, (HMSO, 1994a), the second Competitiveness Paper,
- *Competitiveness – Forging Ahead*, (HMSO, 1995a), the third Competitiveness Paper,

The guidelines make clear reference to a shift in emphasis away from funding R&D work, stating:

"*These White Papers reflect a new emphasis in DTI activities to create a new climate conducive to innovation in its widest sense, promoting adoption of management and other best practices and assisting companies to gain access to and use technology effectively and know-how rather than providing support for the development of technology via R & D grants. One consequence is a continuing shift in overall pattern of spending towards technology access and away from technology development*",

(DTI, 1996a, p. 8).

In the author's opinion, it was the publication of *Realising our potential* (HMSO, 1993) which brought about the most change. The DTI programme evaluation report, *DTI Funded Research Projects At Research And Technology Organisations*, in commenting on policy states:

"*However in 1993 the White Paper changed the way in which budgets would be spent on Research and Development (R&D) and this had a major effect on the funding for research at RTOs (Research and Technology Organisations) ...*",

(DTI, 1996a, p. 1).

The view expressed within DTI at the time of its publication was that DTI's spend on collaborative R&D was small in comparison with that elsewhere, such as by the Ministry of Defence (MoD). DTI's

spend at around £100M (DTI, 1992, p. iv) was compared with the MoD's spend on Defence R&D which was running at around £2,600M (HMT, 1990). Therefore it was argued that it was more sensible for DTI to spend its limited resources on helping firms exploit existing technologies, rather than placing emphasis on developing new ones. Thus spend from the Innovation Budget became increasingly weighted towards technology transfer at the expense of supporting R&D projects.

2.6 DTI Grade Structure

To assist the reader in forming his or her own views on the content of the thesis, references to people in the Civil Service also include details of the Grade of the individuals concerned. Over the years the author has found that generally people were familiar with the grade structure in the Civil Service and had an understanding of the levels of responsibility held. However there have been recent changes to the traditional hierarchy, and to avoid possible confusion the author though it useful to briefly set out those which have taken place in DTI. An internal DTI report, *Implementing the Civil Service White Papers in the Department of Trade and Industry* (DTI, 1996e, chapter 1), provides the background to establishing a new management regime within the Civil Service. The report (chapter 5, paragraph 5.1) makes references to two government white papers. The first, *Continuity and Change* (HMSO, 1994b), set out the government's proposals for leaner and flatter management structures, and the introduction of more flexible pay arrangements. The second, *The Civil Service: Taking Forward Continuity and Change* (HMSO, 1995b), stated the government's commitment to introduce these changes, and also the abolition of Grades 1 to 5 from April 1996.

Another internal DTI paper, *Department of Trade and Industry: Guidance on Allocating Posts to Pay Ranges* (DTI, 1997c, p. 3, and annex A), was subsequently drafted in response to the white paper (HMSO, 1995b). The guidance refers to the white paper confirming:

"*the Government's intention to proceed with pay and grading delegation to Departments from April 1996. From that date, Departments became responsible for pay and grading decisions affecting their staff*",

(DTI, 1997c, p. 3).

The DTI Paper (DTI, 1997c) set out the new arrangements for Pay and Regrading in DTI. It describes how the junior and middle management grades, which comprised six levels in total, were to be reduced into three Pay Bands 'A', 'B', and 'C', with 'C' being the highest in seniority. For each Seniority Band a number of Pay Ranges were defined, into which staff would be placed in accordance with their previous grading. The new arrangements came into effect in April 1997. The guidance (DTI, 1997c) provided a table showing the approximate equivalencies between the old grades and the Pay Ranges. Inspection of this table reveals the relationships between the previous middle management grades and their Pay Range (PR) designations in the new structure (this research obtained much information from people employed in the middle and senior levels of the Service, but not from the junior grades). The relationships are shown below:

Old Grades	**New Bands**	**New Pay Ranges**
Higher Executive Officer (HEO)	Band B	PR7 and PR8
Senior Executive Officer (SEO)	Band C	PR9
Grade 7 (Section Head) (G7)	Band C	PR10
Grade 6 (Deputy Branch Head)	Band C	PR11

The DTI report on *Implementing the Civil Service White Papers* (DTI, 1996e, chapters 2 and 3) details the changes in the Senior Civil Service. Former Grade 5s' (Branch Heads) became Directors of Directorates, whilst former Grade 2 personnel (Head of Command) became Director Generals. Many of the Grade 3 and 4 staff left on Early Retirement, with only a handful of people formerly at Grade 3 level securing a position of Deputy Director General.

2.7 Conclusions

A brief history of how government policy towards supporting business has changed in recent years, and the way in which those changes have impacted on the process of designing support programmes within DTI, has been detailed. How programme expenditure is managed has been explained, and the relationships between the present and previous grade structures described. It has also been shown that central to the changes in government policy has been the move from an interventionist stance in 1979 to the more non-interventionist position which has latterly been taken. This shift can be seen as being in step with developments elsewhere. For example, Phillips (1992, pp. 104-112) refers to the adoption of the free market ideology in the United States (US) which has led to a non-interventionist stance being taken.

CHAPTER 3

THE LITERATURE REVIEW

3. THE LITERATURE REVIEW

3.1 INTRODUCTION

3.1.1 Background to the Research

Chapter 1 set out the initial rationale for considering the research project described in this thesis. There is still much to learn in the area of public policy and a strong interest in doing so. Against this background, the aim of the research described in this thesis has three important objectives. The first is to make a contribution to knowledge through study of the activities involved in a specific and important area of policy making, that of the process of designing policy for the introduction and operation of programmes which focus on supporting firms in becoming more competitive. The second aim is to identify ways in which the policy process can be improved, and in support of this the third objective is to develop proposals for the introduction of a set of good practice guidance for inclusion in a future *Handbook for Programme Design and Operation.*

Chapter 1 posed six questions for research to answer, in support of achieving these objectives. The first three of these were targeted at establishing a credible rationale for undertaking the main body of research work. The questions, and how their answers were seen as contributing to a rationale, are summarised in sections 3.1.2, 3.1.3, and 3.1.4 below. Responding to these questions represented the first task of the "Literature Review".

On the assumption that a clear rationale existed, three further questions were put for research to consider. The first two of these are given in sections 3.1.5 and 3.1.6, together with outlines of why they were being asked. The aim of these questions was to derive a detailed model which described the design and administration process, and then to find ways of introducing improvement. To help in responding to these questions, the second task of the literature review was to identify the lines of investigation, and the approaches which should be adopted in discovering ways to make the design

process more efficient. Finally, chapter 1 raised the issue of generalisability of research results, which is outlined in section 3.1.7.

3.1.2 Contribution to Knowledge

Chapter 1, section 1.3.1 raised the first issue for research to consider, which was would the work of this thesis be likely to contribute to knowledge? It was explained how the 'veil of secrecy' which shrouds policy making from external examination, suggests that the level of published knowledge on the process of designing support policy is likely to be low. Chapter 1, section 1.2 had provided grounds for thinking such was the case. An initial survey of the literature revealed little relevant to the subject of this research. It was hence thought that there was significant scope for research to extend the level of understanding of the design process, and thus would make a useful contribution to knowledge. The author, as a civil servant, was in a position to study the design process directly, and make that contribution to knowledge.

However, before embarking on the main body of the research project, it was first necessary to confirm the existence of critical gaps in current knowledge of the process within the research community. The first research question posed was therefore:

(i) "What is the current, documented understanding of the process of designing and operating support policy, how well is the system described and do significant gaps in existing knowledge exist"?

The response to this question is provided in section 3.2.1.

3.1.3 Establishing Level of Interest in Designing Support Policy

Section 1.3.2 raised the second issue for research to resolve, which concerned the likely levels of interest in identifying ways to improve the process of designing support policy. It was argued that the case for undertaking the proposed research would be strengthened if it could be shown that activity and spend by governments world wide in promoting the competitiveness of their businesses was significant. High levels of activity and spend would render it likely that proposals to increase VFM would be well received. The second question posed for research was therefore:

(ii) "Is the level of activity by governments internationally in delivering support policy, sufficient to warrant investigation of the processes involved"?

This issue is addressed in section 3.2.2

3.1.4 Establishing Evidence of Deficiencies

Chapter 1, section 1.3.3 discussed the third issue contributing to a rationale, which centred around there needing first to be positive evidence of problems existing with the current process. The third research question was to establish grounds for thinking that there was room for improvement, that is:

(iii) "Is there any evidence to suggest that current procedures are in substantial need of improvement"?

The answering of this question is detailed in section 3.2.3.

3.1.5 Discovering the Nature of the Design Process

In seeking ways to affect improvement, it is first necessary to gain a full understanding of the current process, that is, what comprises the system and how its individual components function and interrelate to deliver support activities. The fourth question for research to answer was hence:

(iv) "What is the scope of the process describing the designing and implementing policy for introducing and operating programmes which support firms in becoming more competitive, what comprises that process in terms of the elements which make up the whole system, and how do these elements interrelate in delivering support policy"?

As previously discussed, secrecy surrounding the policy process was likely to have limited research into the design of support policy, and hence in answering this question the author would simultaneously 'plug' a significant gap in present knowledge on the topic. The question is discussed in section 3.3, where the scope of the process is defined, and the areas to be researched proposed.

3.1.6 Identifying Potential Improvements

Having obtained a full description of the current process, it was suggested that the system be investigated in detail to identify potential areas for improvement, and how current arrangements may be bettered. The fifth research question then was:

(v) "In what areas may improvements be introduced and what should those improvements comprise"?

Improving the process is discussed in section 3.4.

3.1.7 Generalisability of Research Findings

Although research would focus on the design of support policy within DTI, there is a need to make sure that the research results are likely to be generally applicable in the public sector. In this way the potential benefits of the research are maximised.

The sixth and final question to be answered was then associated with generalisability:

(vi) "What scope is there for exploiting the results of research beyond DTI"?

An initial discussion of this issue is undertaken in section 3.7, towards the bottom of this chapter.

The following text records the review of the literature.

3.1.8 Building on Current Knowledge

In regard of the purpose of a literature review, Yin (1994) states:

"*Budding investigators think that the purpose of a literature review is to determine the answers about what is known on a topic; in contrast, experienced investigators review previous research to develop sharper and more insightful questions about the topic*",

(Yin, 1994, p. 9)

As a result of reviewing the literature, the author was able to define several supplementary questions which helped probe the process of designing and administering programmes more deeply.

3.2 Establishing the Rationale

3.2.1 Current Understanding of Designing Support Policy

This section of the literature review aims to establish the first component of rationale, by confirming grounds for thinking that research work would lead to a contribution of knowledge. Existence of rationale would be indicated by answering the first research question, which sought to determine the current level of understanding in designing support policy.

The subject of the research described in this thesis falls within the arena of public policy. The literature on public policy records the substantial amount of research which has already been undertaken, and the associated large and wide ranging debate conducted by researchers on this topic. However it is important to emphasise once again that the research described in this thesis is concerned with investigating a particular area of policy making. The focus for research is the process of developing *policy delivery*, particularly for the introduction of programmes, which support firms, mainly in the industrial sector, to become more competitive.

Chapter 1, section 1.2 referred to a preliminary survey of titles and abstracts conducted by the DTI Library, which had indicated little on the research subject. However the author wanted more substantive evidence of the design process not being widely studied. An initial, detailed inspection of the literature was carried out. It was noted that articles on policy tended to major on the implementation of policy; a matter which is open to public scrutiny, rather than on the private aspects of policy making of which programme design forms part. For instance a number of articles were discovered discussing topics such as policy relating to the delivery of healthcare services. However very little documented research was found relating to how officials within government take a policy line introduced by ministers, and then design and operate programmes to realise ministers' aspirations.

Returning to the literature, others were able to give the author confidence that his initial observations were correct. For example Smith, Marsh, and Richards (1993, p. 567) state that it is generally accepted that government departments are the key institutions for policy-making in Britain. They are the focus of the policy process and yet, say Smith, Marsh, and Peters (1993), they have received little attention by researchers. Research work has tended to major on the Prime Minister and the 'core executive', with what studies that have been undertaken of departments focusing on their organisational structures. Although most policy is made within government departments there is, they suggest, "*very little research on the way in which departments make policy...*" (Smith, Marsh, and Richards, 1993, p. 589).

These observations are not altogether surprising. Many researchers of public policy in the UK, and elsewhere, refer to the 'shroud of secrecy' which surrounds the development process (HMSO, 1989; Hennessy, pp. 344-379, 1990; Smith, 1998, p. 65; Weller and Stevens, 1998, p. 579). Smith, Marsh, and Richards (1993, p. 571) record many claiming the absence of research is the result of excessive secrecy. Weller and Stevens continue advising that "*Policy advising must remain a confidential process, to protect the relationships between ministers and their advisers*" (Weller and Stevens, 1998, p. 583). Lipsey (1999, p. 39) agrees. He states that civil servants advice must be secret, as ministers might be embarrassed if appearing to be in conflict with their advisors. Civil servants are under an obligation to keep the confidences to which they become privy in the course of their work (Hennessy, 1990, p. 344). They are thus discouraged from public discussion of the intricacies of their work.

Also study of the literature shows review of policy to have been essentially undertaken by people employed outside government, rather than insiders such as civil servants. Their ability to research and debate the inner workings of the policy machine is severely restricted, as they are not able to benefit from having first hand experience gained from direct involvement. Furthermore, they are denied access to information held by government officials by their need to respect confidentially. Hill (1997, p. 25) suggests that much is kept secret unnecessarily. Taken together, it was concluded from the

aforementioned observations that the intricacies of policy making, which include the design of support programmes within government, is an area which to-date has not been subjected to close examination.

The research described in this thesis illuminates one small, but very important part of the policy making process, that of designing support policy. The author as the researcher, it is argued, was strategically placed to study the process of designing support policy. He was uninhibited by the restrictions on the flow of information from within the policy making process to the research community at large. As a civil servant he was able to study the design process from the position of an insider, having direct access to the people tasked with the introduction of support activities and the documentation which is created in the design and implementation of policy. Furthermore, the author had the important advantage of being responsible for the design and delivery of support programmes himself, and would therefore be able to call on his own experience in the research task.

Thus from his privileged position the author would be able to unveil the policy process and reveal the activities which take place. By answering the research questions posed, he would be able to place in the public domain an analysis of the mechanisms involved in designing and delivering support policies, such that ministers' policy objectives are met. It was anticipated that in so doing, he would make a useful and interesting contribution to knowledge.

3.2.2 Public Support for Industry

This part of the literature survey concentrated on answering the second research question, which was concerned with establishing an economic rationale to undertake research work. The aim was to confirm that most countries in the developed world have industrial policies on which large sums of money are expended by the national governments, thus rendering investigating ways of improving the design process worthwhile. Rhodes (1988, p. 328) usefully defines industrial policy as a set of measures employed by governments to influence the decisions of individual enterprises, so as to improve the overall state of the industrial economy. The author argues that the introduction of

programmes to support firms is one such example of the measures which governments can take, and their design part of the development of industrial policy.

The first factor contributing to an economic rationale is the importance of the role which government plays in international competition, and how it can influence the competitive advantage of industry (Porter, 1990, p. 617). The extent of government involvement is indicated by the literature, which shows that, over time, most of the world's developed nations have implemented industrial policies, implicitly or explicitly, aimed at directly or indirectly improving the competitiveness of industry. The extent of the practice of countries helping firms become more competitive is indicated in the literature. Rothwell and Zegveld (1985, pp. 165-172), Porter (1990, pp. 626-653), Cunningham and Barker (1992, section 2, parts 2-4), and Dodgson and Bessant (1996, chapter 5, pp. 77-153,), for example, list the United States (US), Canada, Japan, Korea, Singapore, United Kingdom (UK), Eire, France, Germany, Switzerland, Netherlands, Norway, Finland, Austria, Italy, Sweden, and Denmark as amongst such nations. To these is added at the pan-European level, policy aimed at improving competitiveness which is delivered by the European Union (EU), (Sharp, 1991 pp. 59-72; Guy, 1998, pp. 2-6).

The scale of activity is also indicated by the range of policy instruments deployed by the developed nations in raising competitiveness. Porter (1990, pp. 626-653), Rothwell and Zegveld (1981, p. 61), Linder and Peters (1990, p. 113), Sharp (1991, p. 63), and Clark and Guy (1998, p. 388) show that devices used include public enterprise (e.g. innovation by publicly owned industries), scientific and technical research (public support of work undertaken in research laboratories and research associations), education (general education, Higher Education Institutes (HEI) courses, apprenticeship schemes), information (information networks and centres, advisory or consultancy services, database services), financial (grants, loans, subsidies), taxation (company, personal, tax allowances), legal and regulatory (patents, environmental and health regulations, monopoly regulations), political (planning, encouragement of mergers), procurement (central and local government of purchases of goods and

contracts for services), commercial (trade agreements), and overseas agents (defence sales organisations), and the definition of standards.

Porter (1990, pp. 644-647), and Cunningham and Barker (1992, section 2, parts 2-4) further describe instances of firms receiving funding from national governments in the form of public contracts, awarded to undertake activities such as R & D in the defence and health areas, for example. Research in this thesis however focuses on those policies which aim to encourage firms to take particular actions by offering grants and raising awareness of the competitive issues they face.

Many of the developed economies adopt support policies which aim to help firms to become more competitive by direct means. Such strategies it is argued, centre around providing support which encourages and helps companies to take appropriate actions in response to the rapid, and often unpredictable, changes of a globalised market (Porter, 1990 pp. 626-627; Senge, 1990, p. 4; Drucker, 1995, pp. 39-40, 75-77). Encouragement and support is often given in the form of financial grants to firms, and by the support of projects which help provide access to companies to the knowledge they require in building and implementing business strategies for growth. The literature reveals the extent of governments' commitment to implementing support policy for industrial firms, and provides examples of how the policy instruments have been adopted. Starting with the European Community, much support for industry has been provided under programmes funded under the *Single European Act of 1987*, prior to which its policies to promote research, development and technology were mostly based on action under Article 235 of the Treaty of Rome, (Sharp, 1991, p. 59). The Act provides the legal basis for the implementation of Community policies on advanced technologies.

The industrial credentials of the Single European Act are displayed in the opening line of the text which the Act adds to Part III of the European Community Treaty a Title (Title VI, Article 130F), that is:

"*the Community's aim shall be to strengthen the scientific and technological base of European industry and to encourage it to become more competitive at an international level*",

(Sharp, 1991, p. 59).

The Act also describes the two tier structure of support: an umbrella programme adopted unanimously by member states called The Framework Programme, which comprises a number of sub programmes each having a specific technology theme. The Framework Programme was adopted in 1987 by the Council of Ministers. It is operated as a staged activity with programme content and objectives reviewed every five years (Sharp, 1991, pp. 65-67). The fourth stage of the programme, Framework IV was voted funding of ECU 13.2 billion (EU, 1999) with the provision of support in the form of grants being a principal funding mechanism (Sharp, 1991, p. 69).

Sharp (1991, p. 66) quotes the principal European Community (sub) programmes which the European Community has funded within the Framework Programme. Examples of these are ESPRIT (European Strategic Programme for R & D in IT) which promotes competitiveness in IT (Information Technology) technologies, primarily micro-electronics and systems development. RACE (R & D in Advanced Communications Technologies for Europe) aims to establish European competence in broadband communications by developing the technology and standards, whilst BRITE/EURAM (Basic Research in Industrial Technologies, Advanced Materials for EURope) supports the industrial Research and Development (R & D) of materials technology, materials and production.

Cunningham and Barker (1992, section 2, parts 2-4) provide examples of industrial support programmes funded by individual countries. For instance, reference is made to the former Federal Republic of Germany's technology policy, under which spending of around 53.5 billion DM was made during 1986 (p. 627). Aimed at modernising the economy, "*the improvement of the technical opportunities for innovation leading to increases in the efficiency and competitiveness of industry*"

is quoted as a prime objective (p. 649). Examples of specific activities funded as a result of 'policy' are the BMFT's Materials Research Programme, which between 1985 and 1994 was expected to spend some 1.1 billion DM.

A further example of the former West Germany's support for industry is the general promotion of industry's capacity to undertake R&D and the dissemination of key technologies (p. 657). Indirect support in the form of tax related measures was employed to encourage firms to take action. On the supply side, policy aimed to promote the development of skilled staff, whilst on the demand side, firms could receive tax concessions on specified investments. A scheme to promote R&D in SMEs was also operated and total spend during 1987 was approximately 762.5 million DM.

In France, the Industrial Research and Development Ministry of Industry, Mining, Post and Telecommunications and Tourism (MIPTT) has general oversight of industrial policy (p. 608). For 1985 funding of industrial R&D was around 15 MdF. Initiatives funded by MIPTT include the PMFE programme (Programme for the mastery of the development of the electronic fabric), which funded basic research in microelectronics and Information Technology (p. 612). PMFE also funded the dissemination of programme results and apprised firms of the importance of emerging developments. Spend on PMFE amounted to some 4 MdF. MIPTT has also provided around 2MdF of support for the electronic industries, encouraging, for example, universities to work with firms in developing their use of Computer Aided Design (CAD).

The Danish Government is quoted as having launched several schemes to promote industrial technology (p. 712). These include financial support to firms undertaking research, encouraging companies to collaborate with governmental research establishments, stimulating technology transfer and the acquisition of foreign technology. The Technology Development Programme (p. 717) aimed to overcome problems in diffusing information technologies into the small firms sector. Aimed at organisations employing equal or less than 200 staff, funding amounted to around Dkr 1,200 million

during 1985, and included provision of R&D grants, knowledge acquisition, awareness campaigns, demonstrator projects, and training.

In Japan, responsibility for the implementation of industrial policy falls to MITI (Ministry of International Trade and Industry), which is quoted as having a total spend of Y100,000 million in 1990 (p. 500). An example of initiatives supported by the Japanese Government is MITI's Basic Technologies for Future Industries project, which was a ten year programme starting in 1981. The programme aimed to establish mass production techniques for the biotechnology industry. MITI's Agency of Industrial Science and Technology (AIST) receives 15% of MITI's budget, and functions to promote the development of natural resources, upgrading of production technology, standardisation in industry and through subsidies to encourage R&D in Japan's private sector.

"*The United States has no explicit industrial policy and no Department or Ministry of Industry*" (Arnold and Guy 1986, p. 32). However evidence suggests the operation of an industrial policy by default. Of the $3.2 billion invested in industrial research during 1989, Cunningham and Barker (1992) point to the contribution of $650 million contributed by the Federal Government (p. 297). Other ways in which the Federal Government has aided industry include tax incentives provided with the introduction of the 1981 Economic Recovery Tax Act. The Act provides an accelerated cost recovery scheme for writing off certain investments. For example, during the period 1981-5, companies could receive tax credits (25 per cent) for R & D expenditure which was in excess of their average expenditure in a base period, normally three years (Arnold and Guy, 1986, p. 48). During 1982 the US Government introduced the Small Business Innovation Research Programme (SBIR) (Arnold and Guy, 1986, pp. 48-49). The objective of SBIR is to encourage innovation by strengthening the role of small, innovative companies in Federal Government funded R&D. Under the programme, a proportion of the government's R&D budget is allocated for funding R&D in small firms which, to be eligible, must employ less than 500 people and at least 51% owned by American

citizens. Arnold and Guy (1986) quote planned expenditure under SBIR for 1987 as being $450 million.

Finally, in the UK, the Department of Trade and Industry (DTI) has lead responsibility for industrial policy (Rhodes, 1988, p. 330). Details of programmes operated by DTI are given in the annual *Trade and Industry: The Governments Expenditure Plans*, published by HMSO (1995c). For instance the 1998-1999 edition (DTI, 1998), serves to provide examples of measures introduced by the department to help firms. Among the initiatives described is the Small Firms Loan Guarantee Scheme, which underwrites loans to small enterprises that lack the security to offer against conventional finance (p. 63), (Rhodes, 1988, p. 329). Started in 1981, the net cost of running the initiative in the financial year 1997/98 was £43.7 million.

A further example is the operation of the Business Link programme, which aims to provide SMEs with a local, one-stop shop facility providing a range of business support services (DTI, 1998, p. 65). Expenditure on Business Links in the financial year 1997/98 was £136.7 million. To help forge partnerships between Higher Education Institutes (HEIs) and SMEs, the Foresight LINK programme provides grants in support of collaborative R&D, whilst the Teaching Company Scheme (TCS) funds the placement of graduates into firms to help the transfer of technology from Higher Education Establishments (HEIs) into SMEs. In the case of the former, a total of £10 million in grants were awarded in the financial year 1997/98 (p. 70). During the same period, public expenditure on the latter was around £18 million (pp. 73-74). Interestingly Rhodes (1988, pp. 328-329) refers to the introduction of the UK *Industry Act 1972* by the previous Conservative Government, which provided for a range of selective assistance, including support for capital-intensive projects in specific industrial sectors, for example wool textiles. The Industry Act 'providing for' the operation of support activities serves to demonstrate that Acts of Parliament can have a key role in policy development, and this role should therefore be subjected to investigation. Chapter 5, section 5.2.2 discusses the role of parliamentary Acts in the operation of support programmes.

The above examples serve to show that the implementation of support policy among the countries of the developed world is widespread. The examples further demonstrate the high levels of activity and investment involved. It was therefore concluded that a rationale to undertake the research existed on economic grounds. The levels of support provided by governments to help firms is of an order which suggests that there will be widespread interest, in proposals to improve VFM.

Of the policy instruments available to governments to further the competitiveness of SMEs, the two of interest to this research are the provision of financial grants, and the award of contracts to run activities aimed at helping firms. Examination of the above examples shows these instruments to have been widely adopted, serving to reinforce the notion that the research results will be of general interest. From his experience, the author also thought that use of these two instruments had facilitated a high level of innovation in the design of delivery strategies in programmes, and would therefore provide a rich area for study.

3.2.3 Deficiencies in the Current Process

The purpose of this part of the review was to address the third research question, by confirming the presence of evidence indicating the existence of problems with present arrangements for policy design.

Dunleavy (1995, pp 52-59) and Klijn, Koppenjan, and Termeer (1995, pp. 437-439) begin the debate. They provide evidence indicative of problems, referring to policy mistakes made in the UK and elsewhere. Dunleavy (1995, p. 52) proposes that problems are particularly acute in the UK, with Theakston (1998, p. 17, 19) providing further indication of difficulties in Britain, citing the new 'Blair' Government as finding the Civil Service's input to policy development as being too weak. He also refers to Whitehall insiders' concerns over the Civil Service's policy-making capacity having been damaged in recent years, with commentators proposing that the policy development process is in need of review and improvement. A number of reasons for problems are suggested by researchers. In

tendering their hypotheses, many begin by citing the changes which have taken place in the UK civil service in recent times. Theakston (1998, p. 13), refers to the massive transformation of Whitehall since 1979, while Doig and Graham (1998, p. 489) highlight the public sector as having been subjected to significant organisational and cultural change.

Barberis (1995, pp 39-40) continues, referring to the May 1979 election of the Thatcher Government. He points to the manifesto commitment of reducing Civil Service numbers, and securing value for money. Doig (1995) highlights the significance of these commitments, saying:

"*what begun after the 1979 General Election as an exercise to reduce the public sector's size and cost developed during the 1980s into continuous change to its organisation, functions and structure*",

p. 191.

DTI has not escaped these changes. For example the National Audit Office (NAO) in their report *The Department of Trade and Industry's Support for Innovation* (NAO, 1995, p. 13), refer to the department having reduced the number of headquarters staff engaged in managing innovation policy. Reference is also made to DTI having significantly reorganised the remaining staff, with many of the technology functions placed in the department's sector divisions.

In addition to the realisation of VFM, Doig (1995, pp. 191-195) describes the emphasis placed on two other main thrusts of activity, discovery of what needed to be done by the Civil Service, and improving performance through introduction of good management practice. Barberis (1995, pp. 39-40) describes the principal occurrences which precipitated change in these areas. He records a number of measures taken by the Conservative Government, including the appointment of Sir Derek Rayner as the Prime Minister's Adviser on Efficiency, and the setting up of the Efficiency Unit which launched several scrutinies of the Whitehall departments. A particular landmark (Barberis, 1995) was the introduction of the Management Information Systems for Ministers (MINIS) into these departments. Introduction

of MINIS also prompted a wider debate on management information systems, out of which came the Financial Management Initiative (FMI) (HMSO, 1982, pp. 5-6).

However Dunleavy (1995, pp. 62-63) challenges the wisdom of the development of what he refers to as "*a cult of 'best practice research' in management theory - in which all pretence of scientific valuation is jettisoned ...*" (Dunleavy, 1995, p. 62). He suggests the cult of managerialism with its de-emphasis of policy work and focus on reorganisation, has given rise to problems. He highlights the writing off of 'intellectual capital', with Conservative ministers shifting away from using their experienced, senior civil servants for providing policy advice, in favour of politically aligned 'think tanks' and external experts. Thus not only is their experience being wasted but, suggests Dunleavy (1995, pp. 62-63), they are denied the opportunity to grow their knowledge and with time run the danger of becoming 'de-skilled'.

Dunleavy (1995) also highlights the resulting 'pushing down' of the responsibility for giving policy advice, down the civil service hierarchy. He also refers to the increased reliance on young civil servants, who whilst being intellectually self confident, highly talented people, lack proper experience in the fields they administer. Lipsey (1999, pp. 76-77) concurs. He highlights the move away from the previous practice of submissions to ministers being prepared by junior officials which were then commented on by senior staff up the 'hierarchy', to the current practice of most submissions going forward directly from junior staff without vetting. This, Lipsey proposes, has not been cost free, with the inherent loss of quality control through not employing the knowledge held by the more experienced people.

Smith (1998, p. 62), signals problems having arisen from the introduction of the Next Steps agencies, which resulted from publication in 1988 of the Efficiency Unit's the *Next Steps* – the Ibbs report (Ibbs, 1988). The key institutional innovation of Ibbs was the splitting off of parts of departments responsible for implementing policy into semi independent executive agencies (Barberis, 1995, p. 40;

Hogwood, 1995, p. 69; Smith, 1998). Dunleavy (1995, p. 63) takes up the theme. For him, problems have been compounded by the *'agencification process'*, where the separating off of staff with in-depth managerial skills or professional knowledge has served to accentuate difficulties. He argues that the ceaseless reorganisation and efficiency savings have reduced core competencies in the Whitehall departments to resource key tasks, and manage contractors effectively. Worryingly Dunleavy (1995, p. 63) highlights the marginalisation and removal of those civil servants experienced in providing policy advice. Loss of access to their knowledge is implied by his conclusion that as a result much of the 'collective memory' of departments has been written off. Hogwood suggests that how departments will adapt to undertake policy functions when much of the practical expertise lies within agencies "*will be one of the most interesting developments of the 1990s*" (Hogwood, 1995, p. 69).

Finally the government's white paper *Modernising government* (Cabinet Office, 1999) provides support for the view that deficiencies exist in the current process. The Paper defines policy making as "*the process by which governments translate their political vision into programmes and actions to deliver 'outcomes' - desired changes in the real world*" (p. 15). It continues by referring to the previous emphasis on management reform which has brought improved value for money, but highlights that little attention has been "*paid to the policy process, and the way it affects government's ability to meet the needs of the people*" Cabinet Office (1999, p. 15).

The likelihood of serious problems existing in policy making had thus been confirmed. Concern had been expressed by ministers over the Civil Service's ability to innovate new policies. Members of the research community had cited the far-reaching changes introduced into the Civil Service in recent years as the primary cause. Reduction in staff numbers and the introduction of agencies had contributed to a loss of experience, a problem made more severe by greater reliance being placed on younger, inexperienced people. Researchers also suggested these problems were not confined to the UK (Weller and Stevens, 1998, pp. 579-581).

As previously argued in chapter 1, section 1.1, the design of support policy is part of policy making, and the problem areas identified were thus likely to be present in the design process. The NAO report on DTI's support for innovation suggested such to be the case, finding there to be scope to improve on current arrangements to enhance overall cost effectiveness, (NAO, 1995, p. 9). The literature suggested there are other causes of ineffectiveness in policy design. Government departments, including DTI, are 'traditional' organisations which have built up their structures over many years (Peppard and Rowland, 1995, pp. 5-6). These structures, they argue, are inadequate for responding to today's rapidly changing markets. Drucker (1993, p. 142) agrees with this sentiment, highlighting the urgent need to make government more effective.

3.3 The Process of Designing Support Policy

The fourth research question sought to establish the scope of the design process and the nature of the components which comprise the process. Answering this question was fundamental. Obtaining a description of the whole process and an understanding of how it functions to meet policy goals was germane to making a contribution to knowledge, and the first step in identifying where improvements could be made. Section 3.2.1 above suggested that surveying the literature was unlikely to yield substantial insights into how support policy is designed, as much of the process is hidden from public view. Nevertheless the author considered it equally unlikely that the literature would be completely silent on the subject, and that information on elements of the process would be in the public domain. In addition the author was aware of documentation in circulation within government which contained information relating to the design process. Review of the literature was hence continued.

To help the research task it was first necessary to establish an understanding of what defines the process of designing support policy, to enable research effort to be focused on those areas which were directly relevant. Hill (1997, pp. 19-21) was helpful in providing guidance on how study of the design function should be undertaken. He refers to many researchers adopting systems theory to analysing the policy process. The principal merit of systems theory Hill (1997, pp. 20-21) continues, is that it

provides a means of conceptualising what are often complex phenomena. In a systems approach to the analysis of the policy process, the political system under examination is treated as a 'black box' of decision making, the decision process representing the function which converts policy inputs into policy outputs. An added advantage of investigating policy from a process viewpoint is that it is useful in breaking down the policy process into a number of discrete stages, each of which may then be easily subjected to detailed analysis. In this vein, Hill (1997, pp. 128-129) refers to many researchers making a distinction between policy making, policy implementation, and the evaluation of policy outcomes, in describing a model for the overall process.

In reading the literature the author observed that the terms 'policy making' and 'implementation', are open to different interpretation. In the case of the latter for example, Lindblom (1980, p. 65) describes under the heading of "*Implementation As Policy Making*", the practice in the United States of Congress issuing imprecise statements of policy, leaving those tasked with administering policies to design the specific implementations, including the required legislation. For Lindblom (1980, pp. 64-68), implementation covers the design of policy at the detailed level, and is taken to include the operation and subsequent evaluation of policy. As highlighted in section 3.2.3 above, the white paper *Modernising government* (Cabinet Office, 1999) agrees with this interpretation, referring to policy making as the "*process by which governments translate their political vision into programmes and actions to deliver outcomes*" (p. 15).

The process of the translation of political goals into activities, and through these interventions the delivery of outcomes, represents the central focus of this research. The author argues however, that for investigating that part of policy making which is concerned with programme development, a modified model employing alternative, more narrowly defined descriptions for the processes of policy making and implementation, would be more appropriate. Again Hill (1997) was able to help, usefully suggesting that a study of a particular policy will include focus on political manifestos and white papers at one end of the spectrum, through the provision of parliamentary Acts, to actions undertaken

after the passing of legislation (p. 141). Implementation, he proposes, is conventionally seen as comprising those activities undertaken after the passing of the legislation that allows proposed interventions to be introduced, (and by implication those activities occurring before implementation, such as the drafting of white papers, as being part of policy making).

The author agrees with this view. In the process of designing policy for support programmes aimed at improving the competitiveness of industry, officials normally work in an environment in which the necessary parliamentary Acts are in place to provide the legal framework for what is proposed. However, as is discussed in chapter 6, sub-section 6.3.3.5, events have not followed the exact sequence as suggested by Hill, regarding the introduction of the programmes that are the focus of this research. Chapter 5, section 5.2.2 discusses the role of parliamentary Acts, and explains how for DTI the Industry (HMSO, 1982), and Science and Technology (HMSO, 1965) Acts have been particularly important in providing the necessary legislation to operate its support programmes (see also Interview 2).

Hill (1997, p. 129) continues the discussion by pointing to some researchers such as Van Meter and Van Horn (1975, p. 445) considering implementation as those actions by people, or groups, that are directed at the achievement of objectives set out in prior policy decisions (policy making). Implementation can thus be viewed as "*putting policy into action*" (Hill, p. 129). Here 'white papers', can be regarded as one of the 'inputs' to the policy implementation process (Hill, 1997, pp. 129, 140-141). Dr. Kenneth Poulter, head of DTI's Management Best Practice Directorate, when in conversation with the author, proposed that white papers represent ministers 'wish lists' for what they want to achieve. They can therefore be viewed as containing statements of government policy. In designing and administering programmes, the author has observed that officials will often take the broad policy aims set out in government white papers, and from these develop the detailed policy for the introduction of support programmes (see chapter 5, section 5.3.10, chapter 6, sub-sections 6.2.3.9 and 6.3.3.5).

However Hill (1997, pp. 137-138) highlights that policy making frequently continues "*during the so called* [policy] *implementation phase*" (p. 137). He refers to the processes of 'concretisation' of policy, or movement back and forth between policy and action, as taking place. For instance, suggests Hill, implementers are not always working with policy that has clearly defined objectives. The author would add that at times policy may be written deliberately vague, such as to allow wide interpretation in implementation. In an interview with Mr. John Cammell, Head of the previous Manufacturing Management and Technologies (MMT) Division of DTI [Interview 2], he viewed the Science and Technology Act (HMSO, 1965) as being indecisive, thereby always allowing officials to find something in its content that allowed them to do what they wanted to do.

Sometimes well defined policy emerges as a result of complex phenomena during implementation (Hill, 1997, p. 133). Thus policy implementation is suggested by some as being best considered as a policy/action continuum, involving interactive and negotiative processes between those who seek to put policy into effect, and those responsible for particular actions (p. 137). These observations suggested that the process of designing and administering support programmes, forms an integral part of policy design.

Designing policy may be considered as part of the process of developing and providing advice to ministers (Hennessy, 1990, 494-495; Weller and Stevens, 1998, p. 579; Lipsey, 1999, p. 38). The author, from his experience in designing and delivering support policy, had witnessed the task as one of developing policy proposals which 'advise' by giving recommendations for the introduction of programmes [Interview 5]. These proposals are submitted to ministers or senior officials acting on their behalf, for their approval to implement a recommended policy action, that is, a proposed programme. Looking on policy design as policy advising, Weller and Stevens (1998) were helpful in defining the extent of the design and administration process. Policy advising they argue comprises "*the whole process of understanding the problems, co-ordinating the responses and formulating their*

advice - in essence, the whole policy cycle from issue identification through to implementation and evaluation" (Weller and Stevens, 1998, p. 582).

For the purposes of his research the author equated issue identification to that of developing the rationale for introducing programmes (see section 3.3.1 of this thesis), and adopted a narrower definition of implementation, taking implementation to comprise the subsequent introduction and administration of programme activities. Evaluation is seen as integral part of the design process, with the results providing inputs (Feedback) to inform policy making (Fernández-Ballesteros, 1992, p. 205; Guy, 1998, pp. 32-35).

The attainment of a description of the principal components of the design process then prompted the supplementary research question of "what process elements comprise each of the three components of 'Issue Identification', 'Programme Implementation', and 'Evaluation including Feedback'"? However Hill, (1997, pp. 128-129) points to certain disadvantages on the use of what he calls the 'top-down' model for the study of policy implementation. A top-down approach is characterised by disaggregating the policy process into the components of policy making, policy implementation, and the evaluation of policy outcomes (the traditional, more general definition of implementation being adopted here). He suggests that arguments for adopting a top-down model rely on being able to view the policy making process as setting aims for implementation, the realisation of which can subsequently be measured (p. 138).

While acknowledging the merit of breaking down the policy process in this way, this view Hill (1997, p. 138) suggests, is seen by some researchers, for example Hjern and Porter (1981); Hjern and Hull (1982), as providing an insufficient foundation for research of the implementation process. He proposes that for many researchers making the distinction between policy making and implementation, implementation is defined in terms of its relationship with policy, that is that actions taken by people during implementation are directed towards the attainment of objectives set out in prior policy

decisions (p. 129). However, as discussed above, policy making often continues into implementation, as specific objectives are not always well defined.

There are other considerations to be taken into account. For example Hill (1997, p. 135) proposes that many government actions do not involve the introduction of new programmes of activity, but instead involve adjustments to the way existing activities are carried out. This, the author suggests, is an example of what Lindblom (1977, pp. 313-317) calls incrementalism, and is discussed further in section 3.5 of this chapter. Other researchers therefore argue for a 'bottom-up' approach for study of implementation (Hill, 1997, p. 138). They propose that focusing research on the individuals and organisations engaged in implementation, studying how decisions are made, the rules, procedures, structures, and policy instruments involved, be more appropriate for analysing what goes on in policy implementation. Hill (1997p. 139) continues, suggesting that to understand implementation, the researcher must attempt to find a conceptualisation based on the empirical evidence of the complexity and dynamics between individuals and groups, tasked with translating policy goals into specific actions.

Usefully Hill (1997, p. 151) concludes that where there is an "*explicit top-initiated, goal-directed activity*" (p. 151), deployment of the top-down model may be appropriate; especially he argues when policy inputs and outputs are measurable in quantifiable terms. Experience of policy under Mrs. Thatcher's government he continues, has provided a number of examples where policy goals have been clear. It is the author's view that the subject of his research, the design and administration of support programmes is, taking Hill's comments, best approached by adopting a top-down, systems modelling approach. He bases this view on the majority of programmes being studied were conceived and operated under Mrs. Thatcher's government, and would thus be expected to have been designed from clearly stated policy objectives.

The author argues that such is the case. As indicated earlier, the author is able to confirm that white papers provide a policy input to the implementation process, as described in chapter 5, section 5.3.10 and chapter 6, sub-sections 6.2.3.9 and 6.3.3.5 of this thesis. Inspection of the white papers relating to the development of support programmes, show them to set out clear goals for implementation policy to achieve. For example the DTI White Paper (HMSO, 1988, pp. 24-25) describes the government's aim to improve the quality of management in small businesses, and describes the introduction of six consultancy initiatives. The intention to support 1,000 consultancy projects every month is stated as a target. The white paper *Competitiveness – Helping Business to Win*, (HMSO, 1994a, p. 68), sets out the government's aim to establish a network of Regional Supply Offices (RSOs) to promote best practice in supply chain relationships. The paper continues by describing the terms of reference of the RSOs, which were to include providing information on sourcing opportunities for purchasers and suppliers.

However the author considered that Hill's observations supporting the argument for adopting a bottom-up approach to conceptualise the implementation process, were nevertheless still valid. He was concerned with discovering what people do in the implementation task. Hill (1997, pp. 151-152) suggests that it can be prudent to adopt a mix of both approaches. The author therefore concluded that a modelling approach which broke the process of designing programmes into the principal components of 'issue identification', 'implementation' (that is programme administration), and 'evaluation including feedback', (Weller and Stevens, 1998, p. 582), but that would investigate in-depth the actors and processes involved within each of these components, would be best suited for the research application. Hill (1997, p. 11) proposes that the policy process frequently involves both public and private bodies, and refers to many researchers advocating the need to study the relationships between the interest groups external to the state, and those within the state (p. 70). The concept of policy networks is thus suggested (pp. 70-74), and their role to facilitate consultation by government, reduce policy conflict, and to help make policy making determinable, is described. The topic of policy

networks in section 3.3.2 below. The following section 3.3.1 begins the process of providing insights into the mechanisms involved.

3.3.1 Framework for Designing Support Policy

Policy making is a complex process. For instance, Minogue (1993, pp. 10-18) suggests the task of policy design is rendered difficult by public policies having to address the complexity of the world of social and economic interaction. Lindblom (1980, p. 5) agrees, describing "*policy making as an extremely complex process ... and whose boundaries remain uncertain*". Review of the literature shows that steps are taken to help officials in dealing with the complexities involved by introducing a structured approach to developing proposals for support policy. Study of this framework enabled a more detailed description of the design process to be gained, and pinpointed topics for research.

As introduced in chapter 1, section 1.1, a significant step towards enhancing the likelihood of introducing support strategies which match their policy aims is represented by the pioneering work of the UK DTI in developing the ROAMEF concept (Guy, 1998, p. 33). ROAMEF, which stands for 'Rationale', 'Objectives', 'Appraisal', 'Monitoring', and 'Evaluation' and 'Feedback', eases the task by providing a framework for officials to use in the design of support policy. Under each heading, for example 'Rationale', officials are required to provide certain information which collectively contributes to a case for intervention. The ROAMEF structure is set out initially in the HM Treasury publication the 'Green Book' (HMT, 1997, pp. 32-33), which provides guidance for the Whitehall departments and government agencies in the evaluation of programmes and preparation of cases for financial support. The Green Book advises government departments of the need to adopt the ROAMEF approach in preparing support cases. In requiring adherence to the ROAMEF format, HM Treasury imposes a structure on the process of developing support cases, the elements of that structure being represented by each of the ROAMEF headings.

It is at this point worth noting that the reference to 'Feedback' is a recent addition (Guy, 1998, p. 33). The author observes, from conversations with colleagues and study of internal documentation, that it remains common practice for officials within DTI to continue referring to these cases for support as 'ROAME Statements', or more often simply as 'ROAMEs'. The practice will be continued in this thesis.

In addition to the 'Green Book' two other, principal sets of guidance relating to policy design were found to be in widespread use within DTI. The first is the DTI *Finance Handbook* (DTI, 1996b), and the *Innovation Budget Guidelines* for use in drafting proposals for Research and Technology (R & T) related activities, (DTI, 1988, 1992, 1996a, 1999a). Inspection of both sets of DTI guidance reveals them to reflect HM Treasury policy, with both advising staff of the need to use the ROAME approach when preparing cases for support. Guidance thus shows the drafting of ROAMEs to be at the heart of programme development.

From his experience the author has found that the successive issues of DTI's 'Innovation Guidelines' are the most comprehensive and frequently referenced source of help by officials. Inspection of the 1999 version shows it to state:

"A ROAME is a formal accounting document containing the justification for support, explanations of what the programme will do, objectives to be achieved, outcomes that will result, justification and explanations of the costs involved, and the arrangements for monitoring and evaluation. It is the primary source document which should act as both guide and aide-memoir to the programme or project",

(DTI, 1999a, p. 27).

Guidance continues by pointing to the role of ROAME statements as 'proposal documents' which set out the case for support. The benefits of preparing a ROAME statement are highlighted, which are quoted as including:

- *"preparing it encourages the project officer to distil thoughts and arguments about the proposal,*
- *it is a vehicle for persuading peers and the approving authority of a proposal's merit,*
- *it is a management tool for regulating activities over the life of a programme or project - at departmental, Directorate, and Project Officer levels,*
- *it is an accounting document, forming part of the audit path showing the purpose for which public funds have been requested*",

DTI (1999a, p. 28).

As discussed above, Weller and Stevens (1998) suggested that the scope of the design process comprises 'Issue Identification', through 'Programme Implementation', to 'Evaluation'. Study of guidance contained in the HM Treasury 'Greenbook' (HMT, 1997) the DTI *Finance Handbook* (DTI, 1996b, section 3.4, 9.1) and the DTI *Innovation Budget Guidelines* (DTI, 1996a, 1999a, chapter 4) reveals the process of developing ROAMEs as one of identifying and discussing the issues surrounding a case for intervention. It is therefore proposed that the drafting of ROAMEs be one of issue identification.

Inspection of the *Innovation Budget Guidelines* reveals the nature of the issues involved and what the process entails. The guidelines explain what information officials must provide under each of the ROAME headings, that is, 'Rationale', 'Objectives', 'Appraisal', 'Monitoring', and 'Evaluation and Feedback', for a good case for support to be seen as argued. Under 'Rationale', officials are advised to first demonstrate the existence of market failure, that is, the identification problems in the operation of the market, and to describe the nature of those problems (Arnold, Boekholt, and Keen, 1999, pp. 9-10), (DTI, 1996a, pp. 35-39, DTI, 1999a, pp. 32-36). Only if problems are properly understood, it is argued, can effective strategies be developed for their reduction, and realistic objectives set for monitoring and evaluation of programme performance. The need to demonstrate how a proposed delivery strategy is expected to reduce market failures is emphasised. Others emphasise the importance of determining market problems and the development of strategies for their reduction. For

Lindblom (1977, p. 317), economic policy making revolves almost entirely round the analysis of market interactions, and the strategies to influence them such as to address identified problems. Officials are also reminded in guidance that interventions must be conformant with policy..

Good practice in setting 'objectives' is also discussed in guidance (HMT, 1997, pp. 5-6; DTI, 1996a, pp. 39-41, 1999a, pp. 36-39). 'Objectives' must be set which clearly state what the actions are designed to achieve, and be consistent with the rationale. Officials are advised that they must be realistic in setting objectives, and wherever possible choose targets which are measurable. 'Appraisal' and 'Monitoring' are mainly concerned with 'Programme Implementation'. Two types of 'Appraisal' are described. To begin with, 'Appraisal' is described in guidance (HMT, 1997, chapter 2; DTI, 1996a, pp. 41-42, 1999a, pp. 39-40) as the process of evaluating strategic options for meeting objectives, selecting those most likely to achieve stated aims. The requirement to consider associated risks and uncertainties is discussed, and guidance given on how the eligibility of recipients of government funding may be determined. 'Appraisal' secondly refers to the reviewing of applications for grants to see that project proposals are supportive of programme aims. The need to assess the ability of project participants to see project work through in terms of financial and staff resources is stressed.

'Monitoring' is the systematic collection of financial and management information during implementation (HMT, 1997, p. 33; DTI, 1996a, pp. 42-43, 1999a, p. 41-42), to track whether objectives are being met and to obtain an early warning of potential problems. Monitoring is also viewed as a continuous process, reviewing requirements as circumstances change or new information comes to light. Data collected via monitoring additionally provides useful information to the process of 'Evaluation'. In preparing ROAMEs, officials must provide details of the 'Appraisal' and 'Monitoring'" strategies to be deployed. Finally 'Evaluation' itself is discussed. As part of the evolutionary process, guidance has been further improved by highlighting the need for the lessons learned during 'Evaluation' to be fed back to those in the design process (DTI, 1996a,, p. 43, 1999a, p.

42; HMT, 1997, pp. chapter 3; Guy, 1998, pp. 32-35). Thus evaluation may inform decisions on future policy, and thus people can learn from experience.

At this point the author wishes to highlight that while the Treasury's 'Green Book' is in the public domain, the DTI *Finance Handbook* (DTI, 1996b) and *Innovation Budget Guidelines* (a restricted document) have not been published. Surveying the three sets of guidance reveals that the DTI *Innovation Budget Guidelines* (DTI, 1992, 1996a, 1999a) provides the most detailed guidance. The decision was therefore taken to use the *Innovation Budget Guidelines* as the starting point in collecting detailed evidence of how the design process operates. That the 'Innovation Guidelines' contain additional, restricted information helps support the view that published information on the process will exhibit gaps.

3.3.2 Contributors to the Process of the Design and Delivery of Support Policy

In designing and delivering business support programmes, the author was aware from his experience that officials do not work in isolation. A number of different players he observed, are involved in the design and delivery of support programmes. He was thus interested to consult the literature to obtain guidance on how the interactions between the players might be analysed. Hill (1997, p. 138) takes up the theme. He refers to the close collaboration characterising the policy making system. Developing the discussion, Börzel (1998, pp. 253-263), usefully refers to people being aware that "*policy making involves a large number and wide variety of actors*" (p. 254). He highlights the functional interdependence of public and private actors in policy making. Börzel continues by pointing to many researchers finding the concept of policy networks as being a useful analytical tool to analyse the relationships between the various actors involved within a particular policy sector. He relates some authors taking the view that policy networks are best understood as 'webs' of relatively stable and continual relationships, which act to pool and orchestrate dispersed resources towards solutions of common policies. Policy networks, Börzel suggests, comprise all actors involved in the design and implementation of policy, (Börzel, 1998, p. 260).

Rhodes (1997, p. 199) takes up the theme. He suggests "*policy networks of resource-dependent organizations are a defining characteristic of the British policy process*". For example government departments are 'non-executant', they do not deliver services and must involve others such as private sector organisations and special purpose bodies (pp. 100, 113). Service delivery Rhodes continues, must therefore involve the linking of organisations. In discussing policy networking, Rhodes (1988, pp.327-343) refers to the concept of producer networks. He proposes that there exists a producer network focused on DTI policy making, (Rhodes actually states the Department of Industry – DoI rather than DTI, but this department was merged with the British Overseas Trade Board to form the DTI, [Interview 3]).

The range of organisations in the industrial policy community Rhodes (1988) suggests is extensive (p. 334), and involves the DTI's dependence on industrial organisations for the delivery of services and the provision to it of expertise in particular sectors (pp. 327, 338). Rhodes also advises of economic interests such as the Confederation of British Industry (CBI), who through their privileged positions can lobby government (p. 340). However, Saward (1990, p. 600) observes the previous Thatcher government had as part of its economic strategy the keeping of an arms-length relationship with bodies such as the Trade Union Congress (TUC) and the Confederation of British Industry (CBI).

The author observed that closer working relationships were developed with the CBI under John Major's government. For example in DTI, officials including the author, collaborated with the CBI on their scoping study to assess the innovation capabilities of organisations in each of the CBI regions. Jordan (1990, pp. 471-472) supports the views of Rhodes and Börzel. He proposes that 'policy communities' involving a myriad of interconnecting organisations comprising both government and non government bodies, are responsible for policy design and implementation. The interrelationships established between members results in the community functioning as a policy network. Hill, (1997, p. 139) highlights the need for research to focus on the actors and agencies, and their interactions, to

identify 'what goes on'. Thus an examination of those bodies in DTI's producer network that are involved in the process of designing and administering of programmes, and how they relate to the process, was a primary area for research to investigate. The subject is discussed in chapter 10, section 10.5.13.

3.3.3 Summary of Findings

To summarise, study of the literature had so far provided a 'broad brush picture' of the process of designing support policy, and how it could be investigated. Section 3.3 proposed that a systems approach be adopted. It was also suggested that developing policy could be broken down into the components of policy making, policy implementation, and evaluation. The process of developing programme support policy was argued as being part of what is conventionally accepted as policy implementation, but that in reality policy making continues in the programme development process. It had been shown that the process of designing support policy to therefore comprise the principal activities of 'Issue Identification', 'Programme implementation', and 'Evaluation including Feedback'. The latter is discussed in the context of incrementalism, showing how the complexity of the design process normally prevents the introduction of optimum solutions, rendering it necessary to adopt a process of 'trial and error' in scheme development, in section 3.5.

In section 3.3.1, study of the guidelines to officials engaged in the design process within DTI had started to provide detail on what is involved in the design process, and thus indicated where research effort should be focused. A structure for the development of cases for support had been identified. The requirement for officials to present cases for support in the form of ROAME statements, defined that structure. 'Issue Identification', it was argued, is synonymous with preparing ROAMEs, that is, the development of support cases. Inspection of guidance to officials has outlined the nature of those issues, and simultaneously indicated the areas of activity involved in the remaining areas of 'Implementation', and 'Evaluation'.

Development of cases for support is key to policy design, and how well the task is undertaken germane to the performance of programmes and hence, of the policies from which they derive. Weller and Stevens (1998, pp. 579, 582-583) agree, referring to the crucial nature of the task. Therefore the preparation of ROAME statements, investigating the procedures adopted by officials in building each section of these cases, represented a prime area for research. Inspection of the 'Innovation Budget' guidance revealed it to be detailed, and therefore represented a good starting point for study of the design process. It was also considered important to investigate the actual mechanisms adopted in programme administration to help gain information on the procedures adopted during programme implementation. How a programme is administered has a direct bearing on the ability of a programme to meet its objectives, which, via the evaluation process, contributes to future policy making. Programme administration is thus a key determinant of policy design. Inspection of the 'Innovation Guidelines' found them to be again detailed in this area, and study of their content likely to reveal much regarding the mechanisms involved.

'Evaluation' (including 'Feedback') had been revealed as strategic to the design process, and therefore a topic which should be researched. On inspection, the author found the subject to be well debated in the literature. Section 3.4.2 below records the survey of the literature in this important area, and discusses its findings in the context of the government departments becoming 'learning organisations'. Finally, section 3.3.2 had suggested that the process of designing and administering programmes was supported by a producer network, and how DTI employed the organisations in this network to gain information and deliver its programmes was an important area for research.

3.4 Identifying Ways of Improving the Design Process

Section 3.2.3 of this chapter had found there to be evidence of problems with the current process of designing support policy. Researchers had also suggested mistakes in policy making were widespread. Section 3.2 revealed the high levels of spending on industrial support policy, indicating that deficiencies in the process were likely to be expensive in terms of wastage. The author hence

considered the posing of the fifth research question, "in what areas may improvements be introduced and what should these improvement comprise?", to be fully appropriate. The objective of this stage of the literature review, was to identify the approaches to improvement which are most likely to yield significant benefits. This objective is in step with government policy. The government white paper, *Modernising government* (Cabinet Office, 1999), recognises the need for improvement, and states the government's commitment to implement change. The white paper informs the reader, "*Modernising government is central to the Government's programme of renewal and reform*" (Cabinet Office, 1999, p. 6). The Paper continues by stating the government's wish to see policy making improve, becoming more strategic and able to deliver services of high quality with efficiency. How to approach the search to discover areas needing improvement was the nest issue to resolve, and ways forward are discussed in sections 3.4.1 and 3.4.2 below.

3.4.1 Business Process Re-engineering

Davis (1996) proposes a way forward in introducing change. He suggests Business Process Re-engineering (BPR) as being an appropriate analysis technique for finding ways to improve the performance of recurring procedures and activities. The author views the design process to be one such example, new programmes continually being introduced to meet changing needs. Peppard and Rowland (1995, pp. 6-21) continue, viewing BPR as a useful tool for examining current processes and bringing about improvements in performance. For them BPR is about finding ways in which to introduce change into organisations such that business performance is improved. They cite many examples of benefits accruing to firms through their BPR projects. The application of BPR to effect change in the current process of designing support policy was then viewed as a topic for research to investigate.

3.4.2 Knowledge Management

Section 3.2.3 above had alluded to a growing lack of experience in the design process. The author viewed this problem as a 'knowledge' related issue. The 'management of knowledge' is now seen by many researchers as fundamental to the successful operation of public and private organisations alike, and through their success to the health of the world economies. As part of BPR, investigating ways of introducing Knowledge Management into the design process was thus considered to be of value.

Drucker (1995, pp. 75-77) takes up the theme. Referring to "*the society of organizations*" (Drucker, 1995, p. 76), he suggests every few hundred years society fundamentally reorganises itself. Drucker proposes that we are at present, experiencing such a change, a transformation to a knowledge based society in which, he proposes, we are aiming towards a world civilisation.

In this new society, knowledge, Drucker (1995) argues, is the primary resource for individuals and the overall economy. The economists' traditional factors of production, he suggests, becomes secondary to the importance of knowledge. However, continues Drucker, specialised knowledge can only be productive when it is integrated with a task. Hence he proposes that a "*knowledge society is also a society of organizations: the purpose and function of every organization, business or non-business alike, is the integration of specialized knowledge into a common task*" (Drucker, 1995, p. 76). It is part of an organisation's role Drucker stresses, *to put knowledge to work* (p. 77), on its processes.

The UK Government is among those recognising the importance of knowledge and its management. The government's Competitiveness white paper, *Our Competitive Future: Building the Knowledge Driven Economy* states:

"*In the increasingly global economy of today, we cannot compete in the old way. Capital is mobile, technology can migrate quickly and goods can be made in low cost countries and shipped to developed markets. British businesses must compete by exploiting capabilities which its competitors cannot easily match or imitate. These distinctive capabilities are not raw materials, land or access to cheap labour. They must be knowledge, skills and creativity, which help create high productivity business*

processes and high value goods and services. That is why we will only compete successfully in future if we create an economy that is genuinely "knowledge driven"",

(Stationery Office, 1998, p. 10).

The Knowledge White Paper considers government to have a major part in the knowledge driven economy. A new approach to policy making is seen as required. Government, it is argued, needs to be as innovative and creative as the private sector in its policy making, and in support of this needs to make best use of peoples' talents. Such creativeness and innovation is viewed as fundamental to civil servants delivering better value from public assets.

People having access to each other's knowledge in policy making was seen as important. Despite the rigour imposed by developing cases in the ROAMEF format, there are reasons for believing that adherence to the ROAMEF procedures is, in itself, insufficient to develop strategies having a high probability of success. The 'Green Book' (HMT, 1997) in its introductory chapter states:

"*Although a great deal of information can be brought within and presented in terms of a formal framework, this can never do more than inform the final decision. Analysis can show how alternative choices compare in many ways, but there will always be further strategic, or pragmatic issues to which those responsible for final decisions must also give weight*",

(p. 1).

Weller and Stevens (1998) agree, referring to the "*'craft-like'*" nature of policy making (p. 583). How to deploy Knowledge Management, such that officials can tap into each other's experiences in designing support policy, was then an issue for the research to resolve. The importance of Knowledge Management in helping civil servants is acknowledged by the announcement of the setting up of a Knowledge Management Unit within DTI (Stationery Office, 1998, p. 61). The author concluded that his research would make a useful contribution to the work of the Unit.

As part of knowledge management, *The Competitiveness White Paper* (Stationery Office, 1998, pp. 60-61) refers to the importance of people across Whitehall sharing best practice in policy making. A Centre for Management Policy Studies is to be established, which is to act as a 'storehouse' for best practice. The white paper *Modernising government* (Cabinet Office, 1999, p. 16, 39) continues the theme, referring to the need for best practice to be identified and spread within government. The potential for benchmarking to help transfer best practice from others such as commercial organisations is also stressed. Identification of best practice in designing support policy and how it may be deployed to good effect in the workplace, was thus seen as another priority area for the research. It followed that how benchmarking techniques could be employed to improve the design and administration of schemes, was a question for research to answer.

Modernising government (Cabinet Office, 1999) refers to "*learning from experience*", and continues "*Government should regard policy making as a continuous, learning process, not as a series of one-off initiatives*" (p. 17). Section 3.5 below discusses how 'Evaluation' is used to feed back experiences in operating programmes into policy design, as part of the learning process. It was thought, however, that 'Evaluation and Feedback' is but one mechanism to affect learning. In looking at ways of introducing Knowledge Management, an important deliverable for research was consequently seen as identifying what other measures could be introduced to enable better sharing of corporate experience.

Senge (1990, pp. 3-10) takes up the learning theme. He refers to the illusion held by many, "*that the world is created of separate, unrelated forces*" (Senge, 1990, p. 3). For him the goal is to develop '*learning organizations*', in which people continually expand their capabilities to achieve the results they desire. Garvin (1993, pp. 78-91) continues, commending learning organisations as fundamental to continuous improvement. The speed of learning, Senge argues, is a major differentiator for business in the 1990s'. In a market that has become global, and increasingly dynamic and complex, work must become learning orientated. It is, he suggests, no longer sufficient for one individual to be responsible for learning on behalf of the organisation. "*The organizations that will truly excel in the future will be*

the organizations that discover how to tap people's commitment and capacity to learn at all levels in an organization" (Senge, 1990, p. 4).

The mastery of certain basic disciplines, Senge continues, is the thing which differentiates learning organisations from traditional 'controlling' organisations (Senge, 1990, p. 5). Senge lists among these Personal Mastery, Mental Models, and Team Learning. A key area for research to address was seen as identifying what elements of knowledge management are required to encourage acceptance of these disciplines to help departments become learning organisations. How to help departments to become learning organisations through deploying Knowledge Management, such that officials can tap into each others experiences in designing support policy, was then another issue for research to address.

To summarise, the government has stated its desire and commitment to seek improvement in the process of policy making. Business Process Re-engineering (BPR) had been identified as an appropriate approach for finding ways in which to introduce change for improvement into traditional organisations such as government departments. It was suggested that research adopt BPR as a means of identifying ways to improve the designing of support policy. It was also proposed that the introduction of Knowledge Management be also considered as part of BPR, to raise the efficiency with which the design process is undertaken. Scope was seen to employ benchmarking techniques, and secure improvement through greater use of best practice. Learning had been identified as an important factor contributing to competitive advantage. Research, it was suggested, should therefore also investigate what features of Knowledge Management are required to help departments become learning organisations.

3.5 Policy Evaluation and Learning

Section 3.4.2 had highlighted the importance of helping government departments to become learning organisations. Section 3.3.1 had found 'Evaluation and Feedback' to be strategic to the design process, and involved the process of officials learning from their experiences. Thus 'Evaluation and Feedback'

was seen by the author as being an important part of the design process to investigate. Not only was it strategic to the process, but as a learning activity it had the potential, as part of overall knowledge management, to help departments become learning organisations. Investigation of 'Evaluation and Feedback' was therefore considered desirable, and a survey of the literature was undertaken in this area.

Guy (1998, p. 1) 'sets the scene' for discussing 'Evaluation and Feedback'. He refers to policy makers' role to take decisions on behalf of the public, and they are thus accountable to the electorate. In this context governments have a responsibility to demonstrate that public funds have been wisely spent. It is generally recognised that, at a national level, governments need to commit programme expenditure to programmes in a number of areas such as health, transport, and unemployment benefit. The total sums involved are large, and unsurprisingly, steps are taken to make sure that publicly funded programmes operate efficiently. Thus Weller and Stevens (1998, p. 579) refer to evaluation being routinely undertaken. Knox and McAlister (1995, p. 413) point to policy evaluation having become an integral part of the public policy process, and viewed as a core political and managerial activity (Palfrey, Phillips, Thomas, and Edwards, 1992).

The need for evaluation is well recognised by the UK Government. DTI's *Finance Handbook* (DTI, 1996b, section 2.1, 3.4) demonstrates the UK Government's commitment to 'Evaluation' as a means of helping to secure value for money across Whitehall. It summarises the aims of the white paper *Efficiency in the Civil Service* (HMSO, 1982), which introduced the Conservative Government's Financial Management Initiative (FMI). The white paper sets out among the aims of FMI that departments must have clear objectives describing what they wish to achieve, and measure their performance in terms of meeting those objectives. Such evaluatory work is seen as a necessary part of departments making best use of resources towards achieving VFM.

As shown in section 3.2.2 above, monies spent on industrial support programmes are in themselves significant, and governments in the developed world take steps to ensure VFM when committing public funds to these schemes. For instance Rhodes (1988, p. 47), points to the emphasis placed on the need to analyse policy and its consequences. Guy (1998, p. 1) takes up the theme, highlighting the importance of evaluation and the supportive monitoring systems to help secure value for money. He points to their initial introduction as the means of providing policy makers with accurate assessments of the results of policy actions to meet the challenge of accountability.

Numerous examples of programme evaluations exist. Among them are the evaluation of two programmes operated by the Irish Department of Enterprise and Employment; the Basic Research Grants scheme operated by Forbairt, (Forfás, 1998), and the evaluation of the AMT in Ireland initiative, (Forfás, 1995). Other examples are the evaluation of Finland's Electronic Publishing and Printing Programme (TEKES, 1998), in the UK the evaluation of the DTI's Regional Office Technology Transfer Programme (DTI, 1993) and the Small Firms Merit Award for Research and Technology (SMART) scheme (DTI, 1994a).

Weiss (1998, pp. 4-5) places a different emphasis on evaluation. She highlights the purpose of evaluation as being to measure the effects of programmes against their objectives as a way of contributing to subsequent decision making relating to current and future programmes. Guy (1998, p. 32) continues, describing how the rationale for evaluation has evolved. He highlights the role of evaluation as generally that of improving the performance of the system being evaluated, with increased emphasis now placed on providing quality inputs to inform policy-making.

The process of evaluating programmes and reviewing policy decisions can be viewed as an example of the phenomenon which Lindblom, (1977, pp. 313-317) refers to as 'incrementalism' in policy making. He highlights the increased emphasis being placed on *scientific policy making* in the form of economic planning in the governments of the market-oriented polyarchies of Western Europe (p. 313). Lindblom

(1977, p. 313) emphasises the importance placed on planning. He points to many people considering that the survival of the market-oriented polyarchies depends on their ability to plan effectively. Continuing, he suggests two approaches to policy making and planning are identifiable, which he describes as the 'synoptic' and 'strategic' approaches respectively (Lindblom, 1977, pp. 314-317). In a synoptic approach the policy maker attempts to arrive at optimal policy designs by taking account of all of the issues involved. The policy maker would, he proposes, attempt to forecast long term trends, and involve the justification of one project in relation to others. Lindblom (1988, p. 171) discusses the process further. He describes an 'all embracing' approach which involves the policy maker in the ranking of the policy objectives in terms of their values (having first surveyed people to assess those values). This stage is then followed by the listing of the multitude of policy options, which would then be compared, and those that are likely to deliver the best outcomes in terms of value selected (p. 171). A synoptic approach is thus intellectually demanding, calling for competency across a broad range of topics in analysing the policy options (Lindblom, 1977, p. 314).

However, suggests Lindblom (1977, pp. 314-317), a synoptic approach is normally impractical. People he observes "*cannot intellectually master all their social problems*" (p. 314). No policy maker can fully formulate policy, and few attempt it (Lindblom, 1980, p. 65). It assumes, he adds, "*intellectual capabilities and sources of information that men simply do not possess, and it is even more absurd as an approach to policy when time and money that can be allocated to a policy problem is limited, as is always the case*" (Lindblom, 1988, p. 172). They cannot therefore cover all contingencies in all possible cases, (Lindblom, 1980, p. 65). The author would agree. From his direct experience of developing programmes he is able to confirm that officials are made aware of budgetary limitations, and the need therefore to prioritise in the allocation of funds, (DTI, 1999a, p. 44, paragraph 5.3.1), (see also chapter 5, section 5.2.6 of this thesis). Instead, Lindblom (1977, pp. 314, 317) proposes that the alternative approach of what he describes as the "*intellectual strategic approach*" be more practical, and to be the most frequently adopted way to proceed in the western polyarchies. Whilst remaining intellectually informed, a strategic approach to policy design reflects

the limited capabilities of human beings, with people resorting to various methods such as 'trial and error' and 'habitual' responses to categories of issues to simplify problem solving (Lindblom, 1977, p. 314).

However Lindblom (1977) highlights the inevitability of an incomplete analysis when adopting a strategic approach, and suggests that it is therefore common for policy makers "*to proceed incrementally and sequentially in the design process with close interplay between end and means*" (p. 314). Lindblom, (1988) refers to this phenomenon as "*The Science of Muddling Through*" (pp. 171-172). Here emphasis is placed on the continual improvement of policy, making a series of advances towards solving problems rather than attempting to implement truly optimised solutions from the beginning (Lindblom, 1988, p. 174). In this process Lindblom (1977, p. 317; 1980, p. 68) points to the dependence on feedback on re-determining the 'means' and the 'ends', as policy is incrementally adjusted to correct deficiencies experienced following the introduction of each 'trial and error' step. Policy, he argues, is thus constantly pushed in new directions with new information.

Thus Guy (1998, pp. 32-35) records the growing concern being expressed for the linkages between evaluation and policy design. He highlights the concept of learning from experience, which is recognised as a fundamental element of the development process. He describes the concept of the Evaluation and Learning System Approaches (ELSAs), and how the learning process is realised by the feedback of evaluation findings to the decision process. Weiss (1998, pp. 4-5) argues that armed with objective information on programme outcomes, people can reach wise decisions in policy-making. There is now widespread recognition of the importance of learning through the application of feedback. Guy (1998, pp. 11-18) and Knox and McAlister (1995, p. 413) suggest many institutions are now paying increased attention to the role of 'Evaluation' in informing the process of developing policy. Guy (1998, p. 21-23) provides further details of how evaluation helps policy, by looking at the extensive monitoring evaluation system developed by the European Commission (EC) to evaluate and

monitor EC Research and Technical Development (RTD) programmes. He suggests the system shows evaluation can improve the performance of programmes in several ways.

At the project level, evaluation provides the potential to improve the performance of individual projects, by feeding back the lessons learnt in the process of monitoring and evaluation. For example dissemination of 'best practice' in 'participation' can help organisations create and absorb knowledge. Feedback can also help participants to develop new networks, and raise the exploitation of project results.

At a programme level, day to day operation can be enhanced with feedback from the evaluation process. Such inputs can act as steering mechanisms which allow programme managers to review programme composition and implementation efficiency, and then 'fine tune' programme delivery to better meet objectives.

Van de Vall (1992) concurs. Referring to what he calls *Programme Adjustment* (p. 197), he records how after a programme has been implemented, monitored, and its impact measured, people often seek advice on ways to increase its effect. He suggests "*at this stage evaluation moves away from the analytical task of evaluative investigation, to the instrumental task of advisory intervention*" (Van de Vall, 1992, p. 197). Put another way, epistemological values are now accompanied with policy values. Fernández-Ballesteros (1992, p. 205) agrees, elucidating evaluation as being pivotal in the design process. The feedback of results provides a system of self correction and improvement of social action and policy. Van de Vall (1992) relates how at each stage of an evaluation, the perspective of the policy problem can change and the programme targeted at the problem refocused. He cites the following example from Dutch industrial innovation initiatives, where the policy problem was redefined over time.

> "*The problem: How can innovation in small and medium sized firms be promoted? This was reformulated first in terms of how should the firms cope with information overload, second how should the firms cope with information under used?*" (p. 197).

Guy (1998, p. 21) goes a step further, proposing that evaluation at the policy level can provide important inputs which contribute to the content of policy, and help demonstrate the efficacy of proposals. Fernández-Ballesteros (1992) agrees, describing how evaluation undertaken at the end of an intervention can help inform the 'decision makers'. By way of example he points to the execution of this process in four, basic programmes for the elderly delivered by the National Institute for Social Services in Spain.

A prime deliverable of 'Evaluation' is the drafting of evaluation reports. Study of these documents shows them to comment on the performance of programmes in terms of meeting their policy objectives, and achievement of VFM. They record the delivery mechanisms adopted, and the administration procedures which have been employed. Also highlighted are problems which have been identified, and steps which should be taken to improve future performance are recommended. Evaluation reports are hence a rich source of data, both for this research and to officials designing policy strategies. Study of evaluation reports was also seen as useful in determining best practice in policy design and delivery, by relating their observations on performance to the delivery strategies employed (see appendix K, pp. 161-187). Evaluation reports are discussed in greater detail in chapter 8, section 8.4.

The government's white paper *Modernising government*, (Cabinet Office, 1999) also places emphasis on the importance of Evaluation and Feedback. "*Learning the lessons of successes and failures of policies and programmes*" (p. 20) is quoted as means to aid development of robust policies which are focused on outcomes. Analysis of how officials deploy the lessons learned from 'Evaluation' was therefore viewed as a strategic area for research to investigate in describing the design process. In support of helping DTI and other departments becoming learning organisations, and seeing how best evaluatory findings can be presented to the design process, was viewed as an additional question for research to answer.

In summary, evaluation and the feedback of findings is strategically important to the design process, and is widely employed in the public sector. Evaluation is necessary to confirm the attainment of value for money, flagging problems which may be occurring or have occurred. It is also plays a fundamental role in the learning process in policy making. It allows the lessons learned in policy implementation to be captured and fed back into the design process, both to 'tune' policy in the process of its implementation, and help inform policy makers of the issues to be addressed.

3.6 Sources of Information

3.6.1 Official Files

Copies of internal minutes, letters sent and received by officials, together with other documents such as minutes of meetings and reports, are held on official, registered files. It is very important that records of DTI activities are held in this way. DTI's *Record Management Manual* (DTI, 1996d) provides guidance to officials on the management of records. In its forward, Sir Peter Gregson, the then Deputy Secretary of the department writes:

"*Good records management is essential to the work of the Department. Our files should contain a reliable, complete and retrievable record of what the Department has done. The Department needs this record to help it pursue consistent policies, learn from past experiences and deal with people and companies in a fair and informed way. The Department also needs the record to show that it has used its resources well, to answer the questions Parliament asks about its performance and to leave to history an account of its stewardship*",

(DTI, 1996d, p. 2).

Files thus record many of the activities associated with the design process. They were therefore regarded as a primary source of documentary evidence for research, and their inspection likely to provide valuable insights. The Records Management Manual (DTI, 1996d, pp. 3-4) continues by highlighting the legal requirement to maintain records, as described in the Public Records Acts of 1958 (HMSO, 1958) and 1967 (HMSO, 1967) respectively. The Records Management Manual continues by

emphasising the Acts requiring every government department to put arrangements in hand to organise and control their records as efficiently and economically as possible. Good Records Management is thus essential. The manual states:

"*In government departments registered files and registry systems are central to Records Management*",

(DTI, 1996d, p. 5).

The Records Management Manual provides further information on the structure of file management (pages 5-40). Within DTI registered files are held in File Registries. Each individual section normally has its own file registry. A member of the section, under the Section Head, is assigned as the Record Manager and is responsible for the organisation of files and their storage on the section. The Manual (DTI, 1996d, pp. 6-17) advises that the Record Manager is responsible for opening new files, and when a file exceeds 2.5 centimetres in thickness to open a new part to that file. Each registry maintains a list of the files which it opens, and those which are held on the section.

Files not in immediate use are sent to DTI's Central File Store (DTI, 1996d, p. 6) for storage until again needed, or archiving. The latter case applies to files which have been 'closed', once all file activity ceases following the completion of programme work. Officials are advised however that files not chosen for permanent preservation must be destroyed after a certain period of time has elapsed. This applies to the majority of files concerned with programme introduction and operation. The Records Management Manual (DTI, 1996d, p. 57-59) advises that registered files are reviewed approximately 10 years after registration, and those deemed to be of no long term administrative use, or contain information of historical value, are destroyed. In the author's experience the figure of around 10 years is typical. The destruction of files, the author observes, gives rise to possible loss of knowledge with time. This was considered to be another problem for research to resolve, and the issue is taken up in chapter 10, section 10.5.9.

The author in the course of the literature review observed other problems. DTI does not hold a central file list which is widely available to officials. Furthermore the Central File Store will not release files to people without the authority of the Record Manager. From his own experience the author has found this practice, coupled with the absence of a composite file list, seriously handicaps accessing information held on file. Ways of improving the situation was an issue for research to address, and is discussed in chapter 10, section 10.5.9.

3.6.2 Forwarding and Copying of Papers

As discussed in the above, officials create and receive a variety of written documents. The author is no exception, and is both a direct and copy recipient of 'mail'. The majority of the documents received are related to the design process, and therefore were regarded as having potential to reveal insights into the mechanisms involved. Historically, material such as internal minutes has been generated in paper format, but increasingly officials communicate with each other using electronic mail. Many 'electronic' messages are not printed out and filed, if, for example, their content is deemed as being incidental. Hence the author ensured that information having relevance to his research was printed out or placed 'on disc' for future reference.

3.7 Wider Exploitation of Research Results

Section 3.3.1 above discussed the role of the HM Treasury publication the 'Green Book' (HMT, 1997), which provides a framework for designing support policy. That government departments across Whitehall are required to adhere to this guidance suggested that the 'Green Book' enforces a common approach to the design process. Given the likelihood of conformity in the design process across Whitehall, potential was seen to apply the knowledge gained from research more widely across government. Scope to exploit the results beyond central government was also suggested by reference

in the 'Green Book' to local government and others outside Whitehall using the guidance contained within the Book (HMT, 1997, p. vii).

3.8 Conclusions

Chapter1 identified six research questions to be addressed, which for convenience were again listed in sections 3.1.2, 3.1.3, and 3.1.4 above. The first three of these questions concerned determining a clear rationale to undertake the proposed work. The next two were aimed at understanding the design process, and finding ways of examining the process to uncover problems and identify ways of correcting these difficulties. Finally the sixth question was aimed at providing confidence that research results could be of general use beyond the Department of Trade and Industry, which represented the focus for studies.

The 'Literature Review' had revealed there to be a good rationale for the research, and enabled an initial understanding of the design process to be obtained. How further information could be derived was indicated. BPR was identified as an approach to uncover inefficiencies in the present system, and exploitation of Knowledge Management was suggested as a strategy for addressing difficulties. The observations which were made, and the conclusions drawn with respect to addressing the research questions, are now summarised.

3.8.1 Confirming a Rationale

Question (i), Contribution to Knowledge – The first research question aimed to confirm that there was an opportunity for research to contribute to existing knowledge in public policy. A detailed survey of the literature had indicated that little was written on the mechanics of designing and administering support programmes, thus affording an opportunity to make a contribution to knowledge. It was suggested that the absence of substantial debate on the subject was due to the process being essentially a private activity within government departments, as civil servants must respect the *Official Secrets Act* (HMSO, 1989) and the confidentiality of ministers. However, as a civil servant, the author was on the

'inside' and therefore well placed to investigate the system and make the desired contribution to knowledge. It was also suggested that a substantial amount of policy work is carried out in the area of designing support policy, and hence it is proposed that there is much of interest for research to discover.

Question (ii), Establishing Level of Interest in Designing Support Policy – An economic rationale for undertaking the research was found to be present. Study of the literature had revealed the role of governments in helping their industries to become competitive to be an economically important one. Study had also revealed the UK and the majority of the governments in the developed world to have implemented policies aimed at improving the competitiveness of their industries. Thus a high level of activity was perceived as being undertaken, and that implementing support policy was widely spread among nations of the developed world. Examination of the expenditure of governments in supporting industrial firms had shown the levels of spend involved to be substantial. This gave grounds for thinking that if efficiency measures could be introduced, then significant cost savings could be made, or more achieved with the same levels of funding.

It was therefore concluded that, given the high levels of spend, and because helping industry to become more competitive is an activity commonly practised by the countries of the developed world, there is likely to be interest in ways of improving the design process. The literature had additionally shown there to be a number of policy instruments available to governments to raise the competitiveness of SMEs. Of these instruments, it is the grant mechanism and the use of contracts to operate support activities which are of principal interest in this research. The literature revealed wide use of these mechanisms elsewhere, lending weight to the judgement that research findings would find wide interest.

Question (iii), Establishing Evidence of Deficiencies – Studying the literature had confirmed evidence of problems arising from inefficiency in the process of policy making. Policy mistakes had

been observed to have been made due to inefficiency. It was proposed that problems were attributable to the structural changes within the Civil Service which have taken place in resent years. Access to expertise has been rendered difficult by these changes, as people are moved out of their traditional policy jobs. They have also resulted in loss of expertise through reductions in staff numbers. These observations tally with those of the author, who has witnessed many of his colleagues leaving their posts (see chapter 1, section 1.2). Greater reliance has been placed on younger, inexperienced staff, which has further served to reduce the system's access to the specialised expertise it requires. The ability of policy makers to create effective policies has consequently been restricted. A report by the National Audit Office (NAO, 1995) has supported this view, and shown DTI not to have escaped problems. As an integral part of policy making it is concluded that, in turn, problems probably existed with the process of designing support policy.

The present Labour Government has stated its commitment to improve the process of policy making, and finding ways of improving the design of support policy to overcome likely problems, was therefore seen as important. It was therefore concluded that this presented research with a worthy goal for research to achieve. Taking this observation together with the observations made in response to the second research question (ii), indicating potential interest internationally in increasing VFM, and the opportunity to contribute to knowledge in an area where much policy making is undertaken, a clear rationale for undertaking the research was perceived.

3.8.2 Main Research Phase

Responding to the remaining three of the six research questions is principally undertaken in the main phase of the research, which is discussed in the following chapters. Reviewing the literature had however begun to provide answers that could be built upon, and provided useful direction as to where investigations should be focused.

Research Question (iv), Discovering the Nature of the Design Process – Although little in the literature was expected to be found, further study had nevertheless enabled a 'broad brush picture' of the process to be constructed. It had shown the process to comprise the principal activities of 'Issue Identification', 'Programme Implementation', and 'Evaluation including Feedback'. The next step for research was to investigate the individual mechanisms employed in each of these three stages. The application of systems theory to investigate the process of policy making had been successfully adopted by others, and it was therefore proposed that the systems approach be employed by the author in his research (section 3.3). However, it is concluded that there is a need to simultaneously adopt a 'bottom up' approach, to reveal the detail of what happens at each stage. Chapter 4, sections 4.6.1 and 4.6.2 discuss the use of the Integrated DEFinition Methodology (IDEF) 0 as the systems modeller for mapping the design and implementation of support programmes, and section 7 the methods for collecting the research data.

The concept of policy networks was introduced (section 3.3.2), and that a significant producer network supports the activities of DTI. Investigation of the external agencies interacting with the design process was recommended to help gain a full understanding of how the design process operates. It was hence concluded that research of the network of organisations supporting the process was necessary. One such body is the CBI. The role of network participants is discussed in those sections dealing with the 'inputs' to the design process. They are chapter 5, section 5.3, chapter 6, sections 6.2.3, 6.3.3, and 6.3.6. Rhodes (1988) had indicated the role of Acts of Parliament in providing for the introduction of support programmes (section 3.2.2). The role of parliamentary Acts was hence seen as integral part of designing and operating schemes, and how they influence the process was therefore seen as an important avenue for research to investigate (section 3.2.2). The subject is discussed in chapter 5, section 5.2.2. White papers were observed to be an input to the design process, representing statements of government policy which are interpreted by officials in introducing actions. Consequently white papers are viewed as playing an important part in programme design, dictating that their role should be

investigated. The role of white papers is discussed in chapter 5, section 5.3.10, and chapter 6, sub-sections 6.2.3.9 and 6.3.3.5.

Research had revealed the provision of guidance to officials engaged in the design process, and initial study of this guidance as circulated within DTI, had uncovered further detail of what the overall process comprises. The successive versions of DTI's *Innovation Budget Guidelines* (DTI 1992, 1996a, 1999a) were found to be particularly informative. Officials must present cases for support in the form of ROAME statements, which enforces a structure to this crucial part of the design process. It was suggested that development of ROAME statements represented the task of 'Issue Identification', and study of the procedures adopted by officials in building each section of these statements was hence a prime area for research. It was also proposed as important to investigate the mechanisms adopted in 'Programme Implementation'. It was argued that the manner in which a programme is administered has a direct bearing on performance and thus the results of subsequent evaluation. Programme administration is thus a key component of programme design, and study of the *Innovation Budget Guidelines* was again suggested as a good source of evidence to begin investigations.

Section 3.5 has also served to highlight the strategic nature of 'Evaluation and Feedback' in designing support policy, and thus important in gaining an understanding of the total process. The literature has shown evaluation and the subsequent feedback of evaluatory findings to be widely employed in the public sector. Evaluation is essential to ministers being answerable to the public in making sure that value for money is realised. However from a process viewpoint the value of 'Evaluation' lies in the learning process, whereby the lessons learnt in programme delivery can be fed back and exploited in future programme policy design. How officials evaluate schemes and present evaluation results to the design process so that experience may be exploited in future policy decisions ('Feedback'), was therefore considered as a prime topic for research. Study of programme evaluation reports were also identified as potentially rich sources of information relating to delivery strategies and their

performance. These reports should be targeted in research to help provide detail on the design process, and in determining good practice in programme design.

In researching the activities involved in designing support policy, review of the literature had shown that study of registered files would be likely to yield evidence of the activities undertaken in designing support policy. Officials are required to place on file, minutes and other documents related to policy design. Issues to be resolved were identified as the potential loss of knowledge with time, as files reach the end of their lifetimes, and difficulties of access is not helped by the absence of a central list describing the files held across the department.

Research Question (v), Identifying Potential Improvements – The fifth research question was concerned with discovering potential ways in which the process of designing support policy could be made better. The literature has suggested ways forward.

Section 3.4.1 showed how the government had been seen as 'going on the record' regarding its commitment seek improvement in the process of policy making. Business Process Re-engineering (BPR) had been identified as an appropriate approach for finding ways in which to introduce change for improvement into traditional organisations such as government departments. It was suggested that research adopt BPR as a means of identifying ways to improve the designing of support policy. The use of BPR is discussed in chapter 10, section 10.3. As part of BPR it was also proposed in section 3.4.2 that the introduction of Knowledge Management to raise the efficiency with which the design process is undertaken also be investigated. The government had signalled its wish to improve the process of government through the better use of knowledge. Ways of helping DTI and other government departments in becoming learning organisations through effective Knowledge Management was seen as a vital (section 3.5). Research, it was suggested, should therefore investigate what features of Knowledge Management are required to help departments become learning organisations, and this issue is taken up in chapter 10, section 10.5. As part of the learning process, it

was considered important to see how evaluation findings should be presented to the policy making process. Exploitation of 'Benchmarking' to improve efficiency by importing external good practice lessons was also suggested worthy of investigation. Benchmarking is discussed in chapter 10, sub-section 10.5.11.1.

Research Question (vi), Generalisability of Research Findings – Finally, the 'Literature Review' had begun addressing the issue regarding the generalisability of the research results. The literature had indicated that the research results were likely to be exploitable more widely within government. It had shown the use of the ROAME concept to be widely used across the Whitehall departments, and hence the results of research likely to be of broad interest within government. A requirement of research was to provide evidence which would serve to confirm that such potential existed. The issue is dealt with further in chapter 9, section 3.4.

3.8.3 Taking Research Forward

To conclude, the following issues were to be investigated by the main body of the research project:

Research Question (iv): Discovering the Nature of the Design Process – "What is the scope of the process describing the designing and implementing policy for introducing and operating programmes which support firms in becoming more competitive, what comprises that process in terms of the elements which make up the whole system, and how do these elements interrelate in delivering support policy"?

Specifically what are the mechanisms involved in each of the stages of:

(a) 'Issue Identification',

(b) 'Programme Implementation',

(c) 'Evaluation including Feedback'.

Research Question (v): Identifying Potential Improvements – In what areas may improvements be introduced and what should those improvements comprise?

Supplementary questions articulated to direct research into areas likely to be fruitful in generating practical proposals were as cited as follows:

(a) how should departments exploit Knowledge Management to become learning organisations (see section 3.4.2), and to help this happen specifically how to:
(b) employ knowledge management such that officials can tap into each others experiences in designing support policy (see section 3.4.2),
(c) present evaluatory findings to the design process (see section 3.5),
(d) to use benchmarking techniques to import good practice employed elsewhere? (see section 3.4.2).
(e) Identify solutions for resolving the specific problems identified with DTI's File Management System, concerning the potential loss of files with time, and difficulties surrounding file access (see section 3.6.1).

Generalisability of Research Findings — what scope is there for exploiting the results of research beyond DTI?

The following chapter, chapter 4, discusses the development of the research strategy employed in answering the above research questions. An ethnographic approach using the case study method was adopted.

Chapters 5, 6, 7, and 8 investigate and map the design process in response to Research Question (iv). Chapter 5 which follows begins the task by developing a detailed overview of the design process. Chapter 6 then investigates the mechanisms adopted in the first of the three component processes, that

is 'Issue Identification'. Chapter 7 continues the mapping exercise, looking at the approaches adopted in 'Programme Implementation', and chapter 8 investigates the process of 'Evaluation and Feedback'. Finally, chapter 10 develops proposals for improving the design process in response to Question (v).

CHAPTER 4

RESEARCH METHODOLOGY

4. RESEARCH METHODOLOGY

4.1 Introduction

Chapter 1 proposed, before embarking on a detailed analysis of the design process, it was first necessary to identify a clear rationale for doing so. The first three of six research questions were posed, aimed at determining the existence of a rationale. Chapter 3 described how a survey of the literature had revealed the required rationale to be present. Whilst the role of 'Evaluation and Feedback' in the programme design and administration was well discussed, there was little published information relating to other components of the process. There appeared to be good grounds for thinking that the results of research would be of value across a broad cross section of the public sector, and there was evidence of problems inherent in the current design process. A rationale thus established, three further questions were posed for the main body of the research task to answer as follows:

(iv) Discovering the Nature of the Design Process – "What is the scope of the process describing the designing and implementing policy for introducing and operating programmes which support firms in becoming more competitive, what comprises that process in terms of the elements which make up the whole system, and how do these elements interrelate in delivering support policy"?

(v) Identifying Potential Improvements – "In what areas may improvements be introduced and what should those improvements comprise"?

(vi) Generalisability of Research Findings – "what scope is there for exploiting the results of research beyond DTI"?

The following text records how the research strategy was developed such that these questions could be answered, and hence the research objectives fulfilled. It is shown that a strategy based on ethnography using the case study method was adopted.

4.2 Positioning of Research

It was considered that the problem of how to improve the overall process of programme introduction was essentially a 'management' issue, and hence research fell into the domain of 'management study'. Management is primarily concerned with the macro and micro behaviour and activities of human beings (Gill and Johnson, 1997, p. 27), and hence is essentially dependent on the social sciences (Lupton, 1970, pp. 3-9). In designing the research methodology it was therefore logical to treat the research subject as falling within the area of social science, and hence to look at previous practice adopted within the field in developing a research strategy.

4.3 The 'Deductive' versus 'Inductive' Debate

The assumptions adopted by each of the two approaches directly influence the choice of research methods (Gill and Johnson, 1997, pp. 28-38). Therefore, in developing the research strategy, it was important to consider their strengths and weaknesses in terms of their underlying assumptions. When deciding on a research strategy, Gill and Johnson (1997, p. 28) propose that researchers in the social sciences often choose between adopting a substantially 'deductive' or 'inductive' approach. The two approaches are regarded by many researchers as being distinct, as they make different philosophical assumptions about the way in which the social world is studied. For example Burrell and Morgan (1980, pp. 1-2) state that researchers make explicit or implicit assumptions regarding the way the social world is researched, which they describe as "*epistemological assumptions about the grounds of knowledge*".

Two opposing, incommensurable epistemologies are identifiable (Bryman, 1984, pp. 75-80), and often in social science these are described as taking a positivist (or quantitative) as against an anti-positivist (or qualitative) position (Gill and Johnson, 1997, pp. 28-34). Positivists take an objective view, regarding social phenomena as occurring 'naturally' (Ryan, 1970, p. 13; Cassell and Symon, 1994, p. 2). They consider that study of the social world should be undertaken using a deductive method, as employed by researchers of the natural sciences (Keat and Urry, 1981, 3-26). Thus key to positivism is the development of theories, which postulate the causal relationships between two or more concepts (Cassell and Symon (1994, p. 2). Theories are then rigorously tested through empirical observation to gain confidence in their validity, or implausibility (Gill and Johnson, 1997, pp. 28-31; Glaser and Strauss, 1967, pp. 1-6). In this way positivists seek means to predict events in the social world (Cassell and Symon, 1994, p. 2). Typically a deductive approach will involve the setting up and mounting of experiments, by way of substantiating the credibility of a theory (Patton, 1987, p. 15).

Anti positivists adopt a very different ethos. They see the social world as *essentially relativistic* (Burrell and Morgan, 1980, p. 5). For them understanding social phenomena from the perspective of the participants is key. They view the social world as comprising component actors whose activities are determined by their frames of meaning (Burrell and Morgan, 1982, p. 5; Giddens, 1976, p. 79, cited in Gill and Johnson, 1997, p. 36, 1993, p. 69). Therefore they argue, explanations of social events will only be adequate if in their derivation the researcher understands and references these 'meaning frames' (Hammersley and Atkinson, 1995, p. 8).

Others concur, referring to the need to understand human endeavour in the context of the meaning systems adopted by the group or society under study (Mishler, 1979, pp. 1-2; Van Mannen, 1979, p. 520; (Halfpenny, 1979, pp. 803-804). Thus, it is argued, events " *can only be understood from the point of view of individuals who are directly involved in the activities which are to be studied*" (Burrell and Morgan, 1980, p. 5). Lispet, Trow, and Coleman (1956, p. xii) refer to it being recognised that knowledge of men's social relations is a prerequisite to obtaining an understanding of their behaviour

in any organisation to which they belong. This implies close involvement by the researcher with the social phenomena being studied. Anti-positivists also question the wisdom of proffering theory as the basis for starting research. They emphasise instead that theory arises inductively out of the analysis of subjective accounts, derived from empirical observation of the actors being studied (Gill and Johnson, 1997, pp. 33-34; Glaser and Strauss, 1967, pp. 2-3; Ryan, 1970, p. 43).

Gill and Johnson (1997, pp. 33-37), and Burrell and Morgan (1980, p. 5) point to the emphasis on qualitative research methods in preference to quantitative approaches by anti-positivists. Qualitative methods are particularly suited to exploration and discovery (Patton, 1987, p. 15). Here many researchers refer to the process of 'induction' as being a key feature of qualitative investigations, where the phenomenon under study unfolds its nature during examination (Burrell and Morgan, 1979, p. 6; Van Maanen, 1982; Waddington, 1994, p. 108). Inductive designs start with initial observations and then build towards establishing general patterns, without the restrictions imposed by pre-conceived hypotheses. This approach contrasts with the quantitative, deductive methods, which involve experimental designs requiring the hypotheses to be identified prior to research beginning. "*Qualitative analysis is not guided by hypotheses but by questions, issues, and a search for patterns*" (Patton, 1987, p. 15). Typically an inductive, qualitative approach involves research methods such as observation, interviews, and the study of documentary evidence (Patton, 1987, p. 15; Glaser and Strauss, 1967, p. 18; Yin, 1994, p. 80).

4.4 Choice of Research Approach

Comparison of the underlying, epistemological assumptions adopted in the two approaches suggested an inductive strategy be the more appropriate for the purposes of this research. At the outset the author had no clear idea of exactly how the programme design process could be improved, and thus he was unable to suggest any interventions having potential to improve that process. Consequently no specific hypotheses could be proffered as to how such interventions would act to bring about improvement, and given this absence of prior theory the deductive approach seemed unsuitable. Rather, an essential

feature of investigations was the discovery of ways to improve programme development as against starting with any firm ideas. Consequently an inductive strategy, with its potential for theory to arise in the process of research, was perceived as more appropriate. Furthermore, research deliverables were seen as more likely to be expressed in subjective terms rather than being definitive. Confidence that a qualitative approach was preferable was drawn from Van Maanen (1979, p. 520). He suggests that qualitative methods, with their focus on translating data in order to come to terms with meaning, rather than being concerned with the frequency of phenomena, are more appropriate for investigating the social world.

Other factors lent weight to adopting an inductive approach. In contrast with the priori nature of positivism, many of the inductive tradition argue that theory which develops out of systematic, empirical research is more likely to fit the data, and hence have a higher probability of being (practically) useful, plausible and accessible (Glaser and Strauss, 1967, pp. 2-18). These were seen as important characteristics of the research, as it was essential that resulting proposals should stand a good chance of introduction in the workplace by being perceived as pragmatic by managers and users alike. Furthermore, anti-positivists argue the superiority of the qualitative approach, with its inherent flexibility arising from emphasis on discovering unanticipated findings, and ability to modify the research strategy in response to these findings (Gill and Johnson, 1997, p. 36; Stake, 1995, pp. 41-42).

4.5 Research Design: General Approach

Researchers investigating management subjects within an inductive framework often choose between research designs based upon action research or an ethnographic approach. Gill and Johnston (1997, p. 59) point to the former as having been valuable for investigating phenomena in the management world. Rapoport (1970, pp. 499) refers to the aims of action research as contributing to the practical concerns of people in an immediate, problematic situation. Whilst these aims appeared well matched to the workplace orientation of the problems described in chapter 3, action research was rejected as

impractical, as the methodology involves planned intervention by the researcher into the processes being studied (Rapoport, 1970, pp. 499-503).

The author did not have, nor did he consider he would be given, authority to interfere with the process of programme design within individual sections, without having evidence that performance would be improved and not impaired. Prior to completion of the research work, no such evidence was available. On the other hand ethnography, which centres upon "*comprehending the behaviour of subjects in their natural everyday settings through an inductive development of an empathetic understanding of those actors' rationality*" (Gill and Johnston, 1997, p. 112), was seen as an approach which would allow the author to directly utilise his position as a civil servant as a means to conduct effective research.

Hammersley and Atkinson (1995. pp. 6-8) propose ethnography as being an approach which allows the researcher to understand people's behaviour in the context of the meanings that guide their responses. They suggest participant observation as providing the means by which the investigator can learn about the culture of the people that are the subject of study. Advocacy for adopting an ethnographic research design was strengthened by the experiences of others. Denzin (1989, pp. 156-180) refers to participant observation being well suited to analysing "*complex forms in interaction*" (p. 180). For Denzin "*The ethnographer attempts to discover the practices and meanings that the members of the group take for granted; in so doing the culture of the group is grasped*" (Denzin, 1989, p.157). Participant observation, he suggests, is about doing ethnography, and entails the description, classification, and interpretation of a specific group's way of life. Participant observation he continues "*is a commitment to adopt the perspective of those studies by sharing their day to day experiences*" (Denzin, 1989, p. 156).

Participant observation was viewed as particularly valuable in allowing the author to capitalise on his position of responsibility for the development and administration of support programmes, thereby allowing him to observe the process first hand. For example, Madge (1953, pp. 130-131) highlights

the ability of participant observation to enable the researcher to draw the correct inferences from his study of the acts of the group by being able to attach the same meanings as the group being studied. Yin (1994, p. 88) sees the technique as providing the opportunity to gain access to events and groups that are otherwise inaccessible to scientific investigation. Continuing with this theme, participant observation allows the researcher to penetrate the various forms of 'misinformation' often endemic in social settings (Douglas, 1976, p. 28), whilst Mintzberg (1973, p. 226) advocates the methodology to provide access to what people can actually do. Denzin (1989, p. 158) agrees referring to the focus in participant observation being on uncovering how persons live their experiences in their daily lives.

For Van Maanen (1982), the objectives of revelation and disclosure take precedence over explanation and prediction in qualitative research. These observations relating to the role of participant research in uncovering 'what goes on' was considered important in overcoming the secrecy issues surrounding the process of programme design (Roy, 1960, pp. 158-168; Lupton, 1963, p.1, pp. 202-203; Golding, 1979, cited in Gill and Johnson, 1997, p. 101-103), alluded to in chapter 1, section 1.2, and chapter 3, section 3.2.1. The author had the advantage of being in a privileged position, being able to exploit his position as a civil servant to gain access to information which is normally inaccessible to researchers. He had direct access to other people employed in the Civil Service who were engaged in the design process, and restricted documentation held on file and elsewhere. His involvement in the process would also allow him to directly observe the actions of others, and allow him to comment on the process of developing policy from the perspective of being 'one of the natives' (Madge, 1953, p. 131-133). The author's direct involvement in the design of support policy was seen as providing a further, important advantage. He would be able to interrogate his own knowledge gained from first hand experience of developing and introducing programmes. These advantages were seen as drawing directly on the strengths of an ethnographic approach, lending support to the argument for adopting such a research strategy. An ethnographic approach would allow the author to capitalise on his special position, to gain valuable insights normally 'hidden' from external agencies.

4.6 Research Design: Specific Methods

The above set out the case for adopting ethnography and using participant observation as a particular research method. However anti-positivists argue that design of research strategy depends not only on consideration of the philosophical issues, but also on those of a technical nature (Bryman, 1984, p. 75). Gill and Johnson (1997, p. 133-134) refer to the need for methodological pluralism, suggesting that, in designing a research strategy, there is seldom one best method to adopt. The need for 'methodological pluralism' in studying social phenomenon is articulated by many anti-positivists. Trow (1957, p. 33) suggests that "*different kinds of information about man and society are gathered most fully and economically in different ways*", with methodological choice determined by the nature of the problem under investigation. Other considerations argue for a multi-method approach. Hammersley and Atkinson, (1995, pp. 230-232) point to the strengthening of findings in qualitative research, if such findings are derived from results obtained from using a number of different, research methods. Brewer and Hunter (1989, pp. 16-21) concur, arguing that activities such as causal investigation, collecting and analysing data, and hypothesis testing benefit from this process of triangulation. Triangulation of methods is further seen as helpful in overcoming bias in the research process (Denzin, 1970, pp. 25-26; Jick, 1979, pp. 602-610).

Before deciding on the suite of research methods which were to be employed, the author first considered how investigations should be structured. Research based on case studies was viewed as best fitting the research problem. Case studies focus on understanding the dynamics in single settings (Eisenhardt, 1989, p.534). Yin (1994) refers to case studies as "*the preferred strategy when "how" and "why" questions are being posed* (explanatory research), *when the investigator has little control over events, and when the focus is on a contemporary phenomenon within in some real-life context*" (Yin, 1994, p. 1). Yin (1994, p. 3) argues the advantage of case studies lies in their ability to help understand complex, social phenomena. Merriam (1988, p. 6) agrees, recommending a research design

based on case study methods as being suitable for studying puzzling phenomenon systematically, particularly in situations where the researcher has little or no control over events. Importantly Yin points to the usefulness of case studies in policy and public administration, research.

Hartley (1993) also argues the relevance of case studies in contextual settings and defines case study research strategy as follows:

"*Case study research consists of a detailed investigation, often with data collected over a period of time, of one or more organizations, or groups within organizations, with a view to providing an analysis of the context and processes involved in the phenomenon under study. The phenomenon is not isolated from its context (as in say a laboratory research), but is of interest precisely because it is in relation to its context.*"

(p. 209).

The above definition neatly encapsulates those proffered by other contemporary proponents such as Stake (1995) and Yin (1994). They show how case studies, as a research method, can be used in exploratory, descriptive and explanatory investigations, (Yin, 1994, pp. 4-5; Stake, 1995, pp. 3-4). Stake (1995, p. 41) continues suggesting qualitative studies are suitable for studying cases to seek out patterns of anticipated, as well as unanticipated relationships. Patton (1987, p. 19) suggests case studies as being particularly useful when one needs to understand some particular problem in-depth, and in situations undergoing change (Hartley, 1993, p. 213). Finally Gill and Johnson (1997, p. 131) refer to ethnography normally involving intensive study of a small number of cases.

These attributes were considered equally important in the research. Firstly it was necessary to explore the bounds of the programme design process, and discover the component activities which comprise the process. It was also required to identify the participant actors, their roles and social connectivity. Secondly the author then wished to adequately describe the processes, roles, and interactions in terms of the holistic view, such that finally how each contributes to the delivery of effective schemes, could be determined.

Yin (1994, pp. 1-15) and Hartley (1993, p 213) summarise the commonly agreed conditions described in the methods literature, for which it is appropriate to adopt a case study strategy:

- when information is sought about relationships which are hard to obtain by other methods such as surveys,
- where new processes or behaviours, or ones which are little understood are being explored
- where the contextual setting is important
- where building or adding to theory through an inductive approach is required
- where the boundaries between a phenomenon and context are not clear
- when informal, unusual or secret organisational behaviour is being explored.

The majority of the above conditions aligned with this study's research objectives and the questions posed.

An important consideration was whether to adopt a single or multiple case strategy. It was thought that the research situation should be treated as a single case study. Yin (1994, p. 40) recommends use of the single case study design in the revelatory case. Single case designs, he suggests, are well suited to situations where the researcher has the opportunity to examine phenomena previously inaccessible to investigation. Time was also a consideration, as being a full time employee, the author's resources were inevitably restricted. Yin (1994, pp. 44-45), and Gill and Johnston (1997, p. 14) suggest a single case approach can be appropriate in these circumstances. It was logical that the focus for study be DTI. Being employed by the department its activities were easily accessible to the author, thus providing potential to speed the research process. However, it was felt that identification of best practice being a primary concern of research, suggested a multiple case approach more fitting. Yin (1994, pp. 38-39, p. 44) refers to the possibility of a single study containing more than one case. Since

several individual programmes previously operated by DTI were to be investigated, the research situation was judged better fitting the single study/multiple case model.

The advantages of adopting the single study/multiple case design over a single case study method were considered as supportive in achieving research aims. The former would be helpful in determining potential best practice through facilitating comparison between cases (Yin, 1994, p. 41). It was realised that whilst the processes involved in the development and introduction of each programme were inevitably not identical, from the author's knowledge of the systems involved (for example, the need to adhere to the ROAME principle), the circumstances surrounding each case were likely to be sufficiently close to provide a framework for comparison. However some researchers suggest that evidence collected from several cases based on different sites is often regarded as having greater credibility and leading to research conclusions which are more robust (Firestone and Herriott, 1983, pp. 14-19; Merriam, 1988, p. 174). Nevertheless Yin (1994, p. 45) argues that the rationale employed for adopting single case designs, for example, their suitability for researching the revelatory case, usually cannot be satisfied by multiple cases. These and the above observations indicated a single study/multiple case design as best fitting the research situation. The approach would facilitate the unveiling of the design process, with the credibility of conclusions strengthened through examination of several case study examples.

4.6.1 Modelling the Process of Designing Support Policy

Chapter 1 had defined the first research question as what comprises the process of designing support policy? The literature review had shown the design process to comprise the component activities of 'Issue Identification', which included developing ROAME Statements, 'Programme Implementation', and 'Evaluation including Feedback'. As the first step in making a contribution to knowledge, it was necessary to explore the bounds of the programme design process, and discover the component activities which comprise the process. It was also required to identify the participant actors, their roles

and social connectivity. Obtaining a full description of the process was also necessary, in preparation for identifying ways in which the process could be improved.

Chapter 3, section 3.3, had suggested that the application of systems theory could be usefully applied to discover the nature of the design and administration process and Ranky (1990, pp. 18-29), relates how system modelling techniques have evolved specifically for helping answer this type of question. He refers to system modelling being useful for obtaining representations of the procedures and activities within complex manufacturing systems and, importantly for this research, other types of system. System modelling, Ranky suggests, is primarily adopted for studying existing systems and in helping the design of new ones. Ranky (1990, p. 18) defines a system "*as a set of interacting components with relationships between them*". The author argues that in adopting the case study method, the process of designing support policy may be treated as a system. Stake (1995, p. 2) agrees, viewing a case as a "*bounded system*" which can be viewed as an object for study. System modelling, which is based on structured systems analysis, was therefore viewed as an appropriate approach for analysing the designing of support policy.

Ranky (1990, pp. 18-19) usefully provides some background to systems modelling, which helped confirm the suitability of the approach and identify an appropriate analytical method for researching the design of support policy. Structured systems analysis and design methods were first used in the early 1970s, as an aid to designing large computer systems. It was subsequently realised that the structured methods could be equally well applied to analyse and model physical systems. Wisnosky and Batteau (1990, pp. 8-11) develop the theme. They refer to the United States Airforce creating a programme called Integrated Computer-Aided Manufacturing (ICAM), with the aim of defining an architecture for the 'factory of the future'. A major development arising out of ICAM was the Integrated DEFinition Methodology (IDEF). IDEF can be "*used to perform enterprise analysis, process definition, and activity/process modelling*" (Wisnosky and Batteau 1990 p. 8; Hanrahan, 2000).

The IDEF modelling technique, Ranky (1990, p. 19) argues, is a useful tool both to identify and describe the elements of a system, and to analyse how they cause change with time. Wisnosky and Batteau (1990, p. 8) refer to a series of IDEF [1] models with IDEF0 performing function modelling, for answering the question "what do I do"?

Wisnosky and Batteau (1990, p. 8) suggest IDEF to be a 'technology' which has grown extensively in its use. Ranky (1990, p. 19) reports the subsequent adoption of IDEF techniques to large numbers of large and small projects outside manufacturing. Others agree. Peppard and Rowland (1995, p. 172) refer to the widespread use of IDEF0 in BPR, to map an existing process prior to introducing improvements. Section 3.4.1 of the literature review discussed the use of BPR in helping to identify options for improving the design process. From the aforementioned observations, it was concluded that IDEF0 is an appropriate method for analysing the process of designing support policy.

4.6.2 Use of IDEF0

Wisnosky and Batteau (1990, pp. 8-9) and Ranky (1990, pp. 19-21) explain the use of IDEF0. IDEF0 adopts the principle of "*successive decomposition*", creating a tree-like structure of diagrams, called boxes, which describe the make up of the system in increasing levels of detail as one moves down the tree. Referred to as the parent diagram, the top box (Level 1) provides a description of the overall system. Below the parent are a series of child diagrams which describe the major components which comprise the overall process. The process elements making up each of these 'childs' is then described in the next level down of boxes (Level 3). The resulting hierarchical tree of parent and child diagrams represents a static model of the system or process. The procedure of successively breaking the system down into smaller and smaller components, is repeated until the required level of detail is reached.

1. In developing IDEF the United States Air Force's initial step was to identify the first three stages regarded as essential for the specification and analysis phases of projects, for example function/activity modelling (IDEF0), information modelling (IDEF1), and dynamic modelling (IDEF2)

Peppard and Rowland (1995, p. 172) emphasise the importance of gaining a good understanding of how a process functions, but simultaneously warn of becoming overwhelmed with too much detail. Figure 4.1 below illustrates the features of the IDEF0 concept:

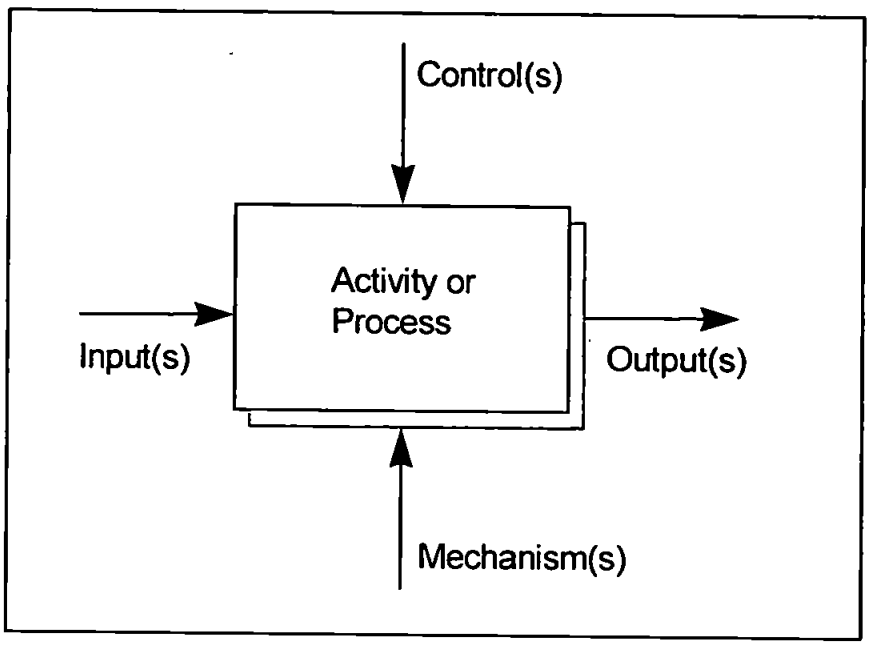

Figure 4.1 IDEF0 Diagram Activity Box

The arrows in IDEF0 diagrams indicate the direction of flow of entities such as information. Each side of an IDEF0 box has particular significance. The left hand side is for 'inputs', the right for 'outputs', the top side is for 'controls' or alternatively called 'constraints', and finally the bottom side of the box is for 'mechanisms' which are used to convert inputs to outputs. The IDEF0 notation adopts the principle that inputs on the left hand side are converted into outputs on the right hand side, using the mechanisms described, but influenced by the constraining factors.

4.7 Collecting the Evidence

Having decided to adopt the IDEF0 modelling technique, the next step was to collect the data from the case studies which would allow the building of the model, with the 'inputs', 'outputs', 'constraints' and 'mechanisms' for each of the system components to be determined. Yin (1994, pp. 90-99) was helpful

in proposing how investigations should be conducted. He suggests that quality case studies arise from applying three principles in case study research. They are:

(i) use multiple sources of evidence;

(ii) establish a case study database;

(iii) ensure the existence of a chain of evidence.

4.7.1 Multiple Sources of Evidence

Yin (1994, pp. 91-92) argues that a major strength of case studies is the potential to use a number of different sources of evidence during investigations. This opportunity, he suggests, enables the researcher to undertake the important process of 'triangulation'. Triangulation involves the development of convergent lines of enquiry, in which evidence drawn from two or more sources of information relating to a phenomenon serves to corroborate each other in pointing to a particular conclusion. Conclusions based on multiple sources of corroborative evidence, Yin (1994, p. 92) proposes, are likely to be more accurate and attract greater credibility when viewed by others (Hammersley and Atkinson, 1995, pp. 230-232).

Yin (1994) and Stake (1995, pp. 112-115) acknowledge four types of triangulation. Yin (1994) lists them as follows:

"*1. of data sources (data triangulation)*

2. among different evaluators (investigator triangulation)

3. of perspectives on the same data set (theory triangulation), and

4. of methods (methodological triangulation)",

(p. 92).

Of these, Yin (1994, p. 92) proposes 'data triangulation' is the more appropriate for case study research.

In considering the data sources to be examined in the research described in this thesis, Yin (1994, pp. 79-90) was again helpful. He proposes that no one source of data has complete advantage over another, but suggests six important sources as:

- documentation: e.g. letters, minutes of meetings, and formal studies or evaluations on the same site as under study;
- archival records: e.g. organisational records, lists of names, and personal records;
- interviews: e.g. structured, semi-structured, and unstructured;
- direct observation: the researcher acts as a passive observer, directly observing the phenomena of interest on the 'field' site. Observation is made using either formal and/or casual data collection activities;
- participant observation: the researcher can be actively involved in the case study situation, and can participate in the activities being studied;
- physical artefacts: e.g. a technological device, tool or instrument or other physical evidence employed within a case study example.

In the context of this research, the value of interrogating each of these data sources were considered as in the following sections.

4.7.2 Documentation

With the exception of preliterate societies, Yin (1994, p. 81) emphasises the relevance of documentary evidence to case studies (Patton, 1987, p. 7). Documentary evidence, he suggests, is important in case studies to provide specific details, and corroborate information from other sources. Documents have

an explicit role in data collection within case studies, and hence systematic searching for relevant documents should form a significant part of gathering information. Section 3.6.1 of chapter 3, the "Literature Review" explained how officials raise registered files on which are held papers recording the activities comprising the design process. Thus registered files are a rich source of documentary evidence. During the course of his research the author obtained a number of registered files, and through examination of their contents was able to gain useful data relating to the design process. Chapter 3 section 3.6.1 further discussed the receipt by the author of papers forwarded or copied to him in the normal course of his duties. These were studied from a research perspective, and those of specific interest to his investigations were stored in a research folder or electronically for further analysis.

Chapter 3 section 3.5 highlighted the availability of programme Evaluation Reports. Evaluation reports record the process of evaluating programme performance in terms of the effectiveness of the delivery mechanisms deployed to meet policy objectives. Evaluation reports were therefore studied to help determine best practice in policy implementation and identify weaknesses in current procedures. Evaluations are undertaken by staff independent of those who operate the programmes to maintain impartiality in the assessment exercise. They may be undertaken by officials or external contractors. Balance in evaluation is also aided by the questioning of people outside the departments who are independent of those who set policy (see chapter 8, section 8.4).

The author considered whether he should place different weightings on the evaluations studied. Some were undertaken by internal assessors, other by external consultants. Study of the reports also showed them to vary in length. He came to the view that they should be treated as having equal weight. A number of considerations led to this conclusion. Evaluation of programmes is normally undertaken in accordance with DTI and HM Treasury guidance (DTI, 1992, 1996a, 1996b, 1999a; HMT, 1997), and thus the assessment strategies will be similar, irrespective of whether work is undertaken by officials or external contractors. Guidance enforces commonality in approach, stating the procedures to be

adopted and the parameters to be measured, (see chapter 8). Furthermore, as evaluators always have autonomy from those responsible for scheme management, the evaluatory environment for both independent and in-house teams, are alike.

The author discussed these points with Dr. Peter Bentley (PR11), who had responsibility for 'Evaluation' in DTI's Business Link Directorate. Dr. Bentley supported the author's views. He usefully added that the additional value of independent evaluations, stemmed from their role of supporting ministers. If, for example, a Minister is required to answer a Parliamentary Question relating to a programme, his response will be perceived as having greater credibility, if he is able to refer to an external evaluation, rather than an assessment undertaken internally. However, from the officials' viewpoint, the lessons learned from external and internal evaluations, carry equal weight. The author also consulted Dr. Ray Lambert, a senior economist in DTI's Innovation Policy and Standards Directorate. Dr. Lambert endorsed the understanding held by Dr. Bentley and the author. He added that variability of length in evaluation reports was more a function of peoples' verbosity, rather than indicating any differences in depth of the analyses!

4.7.3 Archival Records

Yin (1994, pp. 83-84) proposes that archival records may be relevant in case study research. Chapter 2 discussed DTI's Record Management System, (DTI, 1996d) and how closed files are held in the department's Central File Store. Files thought to contain documents relevant to the research of this thesis, were retrieved from the Store for study. In addition the author had archived several editions of DTI's Functional Directory, covering the period 1993 to 1999. These were useful in reminding him of organisational changes which had taken place in the department, and also in helping to identify officials with particular experience.

4.7.4 Interviews

Yin (1994, pp. 84-86) refers to the essential nature of interviews to case study research (Patton, 1987, p. 7). He suggests interviews as an important source of information, "*as most case studies are about human affairs*" (p. 85). Yin (1994) proposes interviews in case study research fall into the three categories 'open-ended', 'focused', and 'structured', which are undertaken along the lines of a formal survey. Yin highlights the use of structured interviews in situations where it is necessary to adopt sampling procedures, to measure the weight of opinion supporting particular views or intentions relating to a case study phenomenon. He cites by way of an example, the surveying of neighbourhood residents and shopkeepers as part of a case study. The author considered the focus of his research to be orientated towards uncovering the mechanisms comprising the process of designing support policy, rather than obtaining information in areas of policy design which could be pre-determined. The use of structured interview techniques was hence rejected.

Open-ended interviews are the most commonly employed in case studies (Yin, 1994; Denzin, 1989, p. 158). Open-ended interviews, Yin (1994, p. 84) proposes, feature asking interviewees not only for their opinions but also for factual information relating to events (Patton, 1987). Thus Yin suggests an interviewee can be considered as an informant, providing the researcher with insights into the phenomena being investigated (Denzin, 1989, pp. 157-158). Furthermore Yin argues that respondents can 'signpost' to other sources of relevant evidence and help suggest alternative lines of enquiry.

The author concluded semi-structured interviews to be extremely relevant to his research, and employed the technique during his investigations. As discussed above, the uncovering of activities involved in designing support policy was an essential feature of research. The provision of insights by individuals was therefore viewed as fundamental in revealing what happens in the process. Seeking views on the merits or otherwise on policy decisions was seen as useful in helping to determine what is, or is not, good practice. Also seen as useful was the advantage of receiving suggestions on lines of enquiry, and information on the location of other, relevant evidence. It is perhaps worth recording that

in practice the author found open-ended interviews to be valuable. In the majority of cases, colleagues, on learning 'what the author was about', became very enthusiastic to help and volunteered much information that could not be expected to be obtained by other means (Patton, 1987). Finally, focused interviewing techniques were also employed. They are particularly useful in corroborating specific facts Yin (1994, pp. 84-85). Indeed the author found them useful in confirming initial findings based on earlier observations made elsewhere. Usefully, on occasions further insights were revealed.

Twenty seven face to face interviews were conducted, and a sample of these is contained in appendix B (pp. 8-69). Following each interview the questions posed and the responses given were recorded in interview notes. In these notes the author also recorded his observations and the draft conclusions which he drew from each interview. In the majority of cases, the interview records were then passed to the interviewees for comment, and any remarks received incorporated into the text. In many cases people added further points which had subsequently come to mind. Where additions were of a substantial nature, copies of the drafts were returned to the interviewees for their final observations before accepting the reports as representing accurate records of discussions.

Stake (1995, pp. 20-21) refers to the evolutionary nature of questions posed in case studies. The researcher begins with his or her etic issues which are to be addressed, and the questions posed will be based on only partial information. As the investigator's knowledge of the case builds, questions will be modified and restated. Emic issues also emerge, from discussion with people involved in the case under study. These emic issues serve to further modify existing questions and add others. Thus as answers to questions increase the researcher's understanding of the subject under investigation, he or she is able to focus on particular issues of interest. In the course of his research, the author observed the interviews tending towards a more structured format, as his understanding of the specific issues to be resolved became more apparent.

Evidence gathered from the interviews was supplemented by a number of ad-hoc discussions with colleagues, held as part of the author carrying out his day to day work. The author took the opportunity when talking to his colleagues, to raise and discuss points of interest to the research. In conversation the opportunity to clarify certain points was also taken. In such instances the points raised were recorded in the author's official notebook, with the observations made subsequently transferred into the text of the thesis.

Yin (1994, p. 85) warns against asking leading questions in interviews, as to do so endangers the corroboratory value of evidence obtained. The author took special care in this area. He applied the knowledge gained from attending a DTI interviewing course, which advised on how to pose 'open questions'. The value of asking open questions lies first in avoiding interviewees being influenced in their responses by views held by the questioner. Secondly, by withholding information that he or she holds, the interviewer encourages interviewees to examine their personal knowledge in answering questions, and communicate all which is relevant to the interviewer.

4.7.5 Direct Observations

Yin (1994, pp..86-87) recommends direct observation of such activities as meetings as being useful in providing additional information on the subject being studied. The author observes that the term 'direct observation' is being used in the context of the researcher assuming the role of a passive observer. Since the author was himself very much part of the design process, he could not take this role, and 'direct observation' was consequently discounted as a viable research mechanism.

4.7.6 Participant Observation

Yin (1994, pp. 87-88) refers to the special nature of participant observation, in which the researcher is not just a passive observer, but instead can be actively involved in the system being studied (Denzin, 1989, pp. 156-157). He highlights the advantages of participant observation. Participant observation

enables the researcher to make observations relating to a case study, and he suggests the observation of events such as meetings, and the actions of people in the workplace, as being useful in collecting case study evidence. For Yin (1994, p. 88), participant observation provides access to events or groups which are otherwise normally inaccessible to investigation. A second advantage he proposes is the ability to perceive reality from the point of view of someone inside the case study rather than external to it. Gill and Johnson (1997, pp. 103-105, 113-114) agree, and refer to participant observation as providing the means of access to the knowledge which individuals possess about their situations within organisations, and their understanding of others within those organisations (Denzin, 1989, pp. 156-158; Waddington, 1994, p. 108).

Yin's (1994) observations were seen as pertinent to research issues. Chapter 3 referred to need for secrecy in the process of policy development, which tends to prevent access to the process by those external to the Civil Service. As discussed in section 4.6 above, the author was able to study the design process as a full participant in that process. As a member of the Civil Service he was not barred from accessing others involved in policy design, and had direct access to the documentation which has been generated in support of the process. Being a civil servant he was also able to perceive 'reality' as an 'insider'. The author was thus in a very special position, not only because he had ease of access to the information sources he required to interrogate, but also as an experienced individual employed to design and implement policy, he was able to interpret what he observed in the same context as that adopted by the Civil Service community at large (Madge, 1953, pp. 130-131). Participant observation was therefore considered as an appropriate research tool, and formed an important part of the overall research strategy.

The author was aware of the issues surrounding impartiality. While recognising the strengths of participant observation, Gill and Johnson (1997, p. 114) refer to the danger that by being immersed in the every day lives of the actors being studied, the researcher internalises the actors' culture. In response to this observation, the author would argue that being a civil servant of many years, he has

already internalised the Civil Service culture. In so far as investigating the design process is concerned, he cannot now de-internalise his knowledge of the system. Instead he would argue that through the process of triangulation; that is by consulting a number of different information sources, including the interviewing of people involved in the design process and evaluation reports, the latter involving opinion collected from external sources, he has taken the necessary steps to avoid bias in arriving at the research findings. The topic is discussed further in section 4.8.2 below.

In the course of his normal work during the research period, the author was required to attend numerous meetings with colleagues. These meetings provided an excellent opportunity to witness the role of others in designing support policy, and from his observations comment on the activities involved. Observations made during the course of policy meetings supplemented information gathered from documentary sources and interviews. Observations were recorded by the author in his official note book, and following further study transferred into the text of this thesis.

4.7.7 Physical Artefacts

Section 3.3.1 of chapter 3, the literature review, had shown how officials are provided with guidance in executing the process of designing support policy. Three particular sets of guidance were identified: The 'Green Book' (HM Treasury, 1997), the DTI *Finance Handbook* (DTI, 1996b), and the *Innovation Budget Guidelines* (DTI, 1996a 1999a). These sets of guidance can be regarded as 'tools' that are employed by officials in the design process to help them develop programmes which are 'fit for purpose' and provide value for money. Detailed examination of these sets of guidance was undertaken, as a first step in developing an IDEF0 static model of the process of designing support policy.

4.7.8 Case Study Database

Yin (1994, pp. 94-98) emphasises the need to maintain a data or evidentiary base recording evidence collected during investigations as a separate entity from evidence and conclusions as presented in a report. Stake (1995) concurs, advising that "*the researcher should have a data storage system*" (p. 55). The purpose of such a repository of data is that it provides direct access by other researchers to the 'raw' data, allowing them to directly view this evidence and not be limited by what is contained in written reports. In this way original evidence may be subjected to secondary analysis by others, independent of conclusions drawn by the original investigator. The ability to challenge the original findings in this way Yin (1994) suggests, enhances the reliability of case studies. The author would add from his own experience, that access to the original evidence helps in self checking one's findings to ensure initial conclusions are valid.

Case study notes are normally the most common records of evidence in a database (Yin, 1994, p. 95), and may take several forms including records of interviews, observations and document analysis (Stake, 1995, p. 55). In support of writing this thesis, the author, as described earlier, produced a written record of each interview, which was held electronically on disc. In addition, notes of observations made during official meetings and ad hoc discussions with colleagues were held in his notebook. Observations drawn from the literature were also recorded and held on disc, and where possible paper copies of relevant documents were held by the author in research folders.

4.7.9 Maintaining a Chain of Evidence

Yin (1994, p. 98-99) argues that to increase the reliability of information in a case study, it is necessary to maintain a 'chain of evidence', which allows an observer to follow the derivation of evidence from the initial research questions to ultimate conclusions, and, if he or she wishes, to undertake the reverse process. The chain should allow the reader to move from one part of a case study to another, with clear cross referencing to the methodological procedures and the evidence derived. In this way the reader is

able to consider all the evidence collected during a case study, the analysis process, and the results derived, to ensure no evidence has been lost or overlooked, thereby prejudicing the accuracy of the conclusions reached. Thus if a chain of evidence is maintained, Yin (1994) argues, the quality and construct validity of the case will be increased.

In drafting the thesis, the author ensured that such an 'audit trail' was built into the text. Conclusions were cross referenced to those parts of the text which contained the discussion of observations, and that had led to those conclusions being drawn. In turn, observations were cross referenced to the sources of evidence with which they were associated, that is, interviews and discussions held, meetings, documentary evidence, and personal knowledge.

4.8 Methods Limitations

4.8.1 Generalisation

The case study method was chosen as being the most appropriate approach for the research task, that is, the investigation of the process of designing support policy within DTI. However a concern commonly expressed among researchers regarding case studies, is over the issue of their generalisability (Stake, 1995, pp. 7-8, 85-88; Gill and Johnson, 1997, p. 124). Yin (1994, p. 10) refers to the common complaint made about case studies, over the difficulties of generalising from one case to others.

Gill and Johnson (1997, pp. 124-125) take up the theme. They refer to some researchers questioning whether theory derived from the research of a small number of cases still holds good for explaining causal relationships in a wider range of situations. However the author argues that the focus for his research was to explore and describe the phenomena comprising the process of designing support policy, investigating the activities involved and their interrelationships, rather than about developing theory which would explain the relationships between events. Hence the generalisability of theory was not considered as a significant issue in the case of this research. Yin (1994, p. 35) supports the

author's view, referring to the problem of 'internal validity' of case studies in which the aim is to establish causal relationships as not being an issue for exploratory or descriptive studies.

Yin (1994, pp. 30-31) relates the problem seen by some researchers of "*statistical generalization*" in case studies. Doubts may be cast on the confidence with which inferences can be drawn from a small sample about the general behaviour of a larger population. His response is to propose that cases are not 'sampling units', and suggests:

"*A fatal flaw in doing case studies is to conceive of statistical generalization as the method of generalizing the results of the case*",

(Yin, 1994, p. 31).

The author would additionally argue that the purpose of case study research, as previously observed, is to uncover the activities involved in the area of study.

The question of 'external viability' of case studies is also frequently questioned (Yin, 1994, pp. 35-36). Stake (1995, p. 7) takes up the debate. He acknowledges that in case studies normally only a single case or just a few cases will be investigated, and thus represent only a small sample, but argues that these will be studied in-depth. His observations were seen as according with the author's research project, it being focused upon a single situation, the DTI, but involving in-depth investigation of a number of support programmes.

Stake (1995) continues arguing that "*case studies are undertaken to make the case understandable*" (p. 85). They are not, he suggests, undertaken primarily to understand other cases. He proposes that often a case is of interest to readers for 'its own sake', with their interest in generalising from it being small. However generalisation is possible, Stake (1995, pp. 85-86) suggests, because people can learn much "*which is general*" from a single case study. He proposes that certain activities, issues, and responses

occur repeatedly, and hence particular generalisations can be made. People reading case study reports, Stake (1995) continues, can form new generalisations by adding the knowledge which they gain to that which they already hold on similar situations with which they are already familiar. The author viewed these aspects of case studies as important and relevant to improving the design process across government. People elsewhere in Whitehall were seen as likely to recognise the procedures adopted within DTI in making policy. Government departments are in the business of designing and delivering policy (Cabinet Office 1999, p. 15), and thus officials in other departments are likely to have experienced similar situations as people employed within DTI.

Looking specifically at the process of designing support programmes, further grounds for supposing that procedures adopted elsewhere in Whitehall were similar to those adopted by DTI, were based on the content of the Treasury 'Green Book' (HMT, 1997). As discussed in chapter 3 section 3.3.1, the book requires Whitehall departments to adopt the ROAME framework in developing cases for support. That all departments are required to adhere to the Treasury's guidance helps enforce conformity in the approach to programme development across Whitehall. Thus it was supposed that the mechanisms employed by DTI in designing support policy were close to those used elsewhere, and therefore research findings would be applicable to other parts of government. Discussion of this topic is developed further in chapter 9, section 9.3.

Yin (1994, pp. 34-35) raises a further concern often expressed in relation to generalising from case studies. This relates to construct viability. Researchers, he suggests when beginning their investigations, frequently define the phenomena to be studied in too broad detail to enable useful generalisations to be made. To address the problem Yin (1994) advocates two steps be taken:

- that the specific changes to be studied in relation to achieving research objectives be identified,
- show that selected measures allow direct assessment of the changes to be studied.

For the purposes of this research a wider but still precise interpretation of 'change' was adopted, to include the phenomena which were the target of study such as, for example, the processing of information in drafting documentation, and changes in understanding as officials learn more about specific market failure.

The author was content that construct viability was satisfied. The "Literature Review" had shown that the areas of prime interest were the development of programme ROAME statements, 'Implementation', and 'Evaluation including Feedback'. Means of discovering the elemental processes involved were provided by examination of documentary evidence including registered files and evaluation reports. The use of interviews as a further way of collecting evidence was discussed above in section 4.7.4.

Yin (1994) proposes that construct viability is enhanced in case study research by the use of multiple sources of evidence as part of convergent lines of enquiry, maintaining a chain of evidence, and having work reviewed by the key informants. Section 4.7.1 discussed the use of multiple sources of evidence and the adoption of 'triangulation' in interpreting the evidence collected. Section 4.7.1 further explained the steps taken in this research to maintain a chain of evidence. Finally also recorded was the procedure of asking each interviewee to check the content of interview reports, including the accuracy of the inferences drawn from these interviews.

A further step was taken by the author help ensure the credibility of his thesis. Dr. Peter Bentley, then Director – Finance and Assessment, of the Business Link Directorate in DTI, was asked to read and comment on the final thesis. Dr. Bentley, as a senior official with many years experience of designing and administering support policy, was able to make useful observations regarding the content of the thesis, and his comments were included in the final draft. Thus the author considered he had conformed with recognised 'good practice' in case study research.

4.8.2 Problems with Participant Observation

Section 4.7.6. discussed the author's role as a participant observer in researching the process of designing support policy. However some researchers highlight difficulties in adopting this mode of observation. For example Gill and Johnson (1997) highlight the possible danger of the researcher becoming involved in peoples' lives to the extent whereby he or she internalises the culture of the people under investigation, prejudicing the researcher's ability to maintain a neutral stance in observing events, "*That is they actually become a member of the organization, or 'go native'*" (Gill and Johnson 1997, p. 114).

The author understood the dangers associated with participant observation. At the time of beginning his research, the author had worked in the Civil Service for around 12 years, specifically within DTI in designing support policy for several years. He was thus very much part of the system which was the subject of investigation. However the author took the view that the strengths of his being a member of the community under study outweighed the disadvantages. To begin with section 4.7.6 showed a strength of participant observation to be in providing access to events which are normally inaccessible. Participant observation therefore allowed the author to capitalise on his position as a civil servant, to unveil activities normally hidden from public view. Secondly participant observation afforded the ability to interpret observations from the same perspective as the subjects being studied. This was viewed by the author as important. It helped him understand the emphasis which is placed on certain matters, such as ministers' agendas, and relate actions to priorities which are unique to the Civil Service. Understanding the culture helped, for example, in differentiating between phenomena associated with addressing market failures, from those concerned with responding to organisational imperatives.

There is a further consideration which lends weight to the argument for adopting the role of participant observer. Douglas (1976) argues that for all social research, direct experience is "*the most reliable form of knowledge about the social world*" (Douglas 1976, p. 7). He continues suggesting that people

are not always able to articulate what they experience accurately, and without personal experience of the phenomenon it is more difficult for the researcher to check the credibility of what is being communicated. For Douglas, 'depth-probes' facilitated by participant observation:

"*are vital in getting at the deeper, more secret aspects of social life, those about which the members often would not talk or possibly even think. In these forms the researcher's knowledge of his own feelings becomes a vital source of data*",

(Douglas 1976, p.16).

Douglas (1976, p. 16), and Gill and Johnson (1997, p. 114) emphasise the importance in participant observation, of the researcher maintaining his or her commitment to being impartial in both investigating the phenomena being studied and in developing conclusions. Maintaining 'objectivity' in this research was helped by the analysis of evaluation reports, some of which were prepared by bodies external to the Civil Service, the study of relevant articles contained in the literature more widely, and gaining the views of staff employed in external organisations.

4.9 Mapping the Design Process

The following chapters 5, 6, 7, and 8 describe the research which was undertaken to obtain a model providing a detailed description of the design process. To aid the reader in following the research through, Figure 4.2 below contains a flow chart of the design process, showing the principal elements and their sequence in the process. The flow diagram was derived from the results of analysing the design system (see chapter 8, section 8.8).

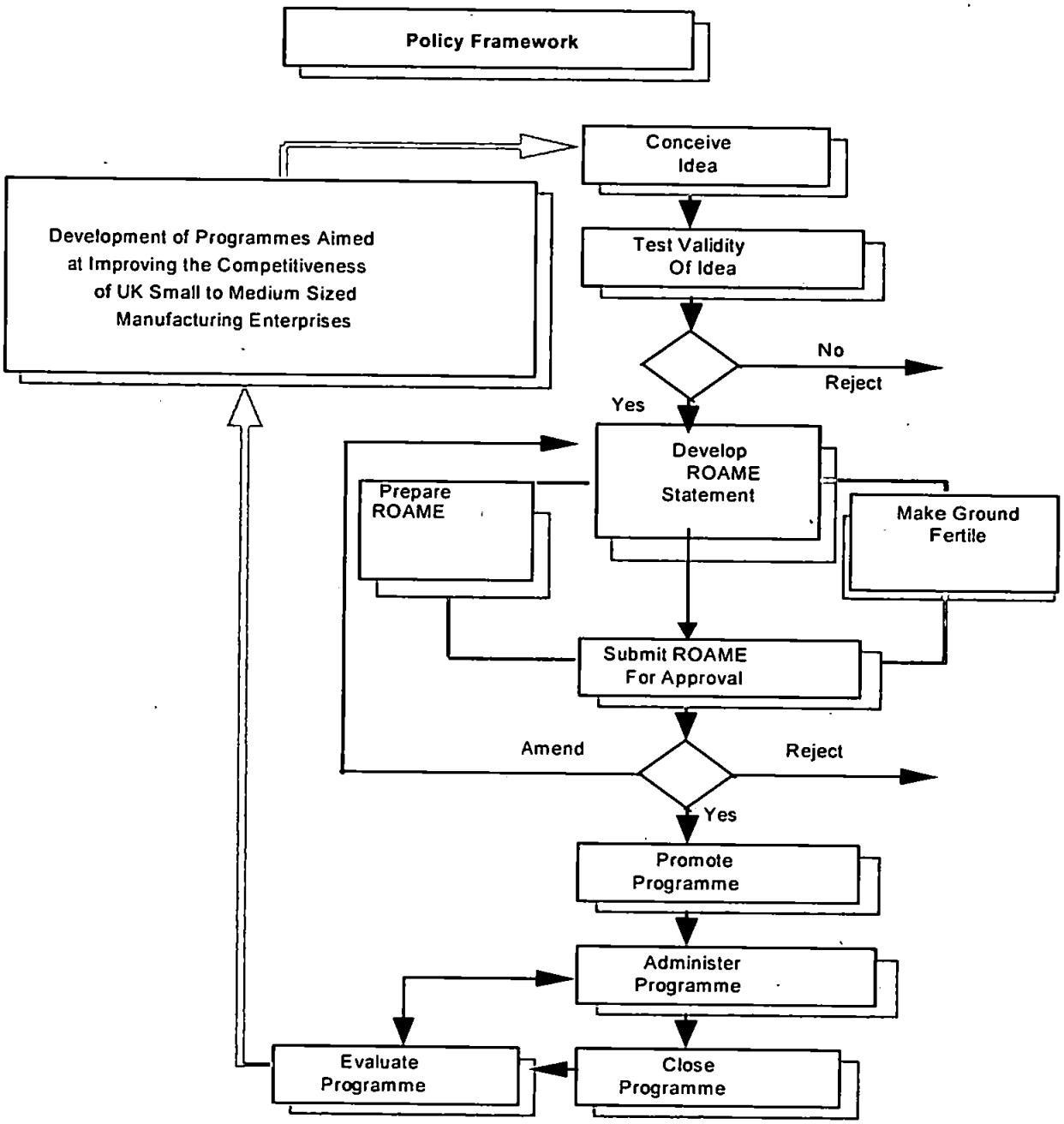

Figure 4.2 Flow Chart of the Process of Designing and Administering Programmes

CHAPTER 5

MODELLING THE PROCESS OF POLICY DEVELOPMENT:

TOP LEVEL ANALYSIS

5. MODELLING THE PROCESS OF POLICY DEVELOPMENT: TOP LEVEL ANALYSIS

5.1 Introduction

5.1.1 Background

This chapter records the first stage of the task of building a detailed model of the process of designing support programmes. The aim is to develop a top level (Level 1) IDEF0 diagram providing a description of the overall process.

Chapter 1, section 1.2 defined three research objectives; to make a contribution to knowledge, to find ways of improving the design process, and to identify proposals for introducing a set of good practice guidance for use in programme design and administration. In order to achieve these objectives, Chapter 1, sections 1.3 to 1.4, and 1.6 and 1.9 posed six questions for research to answer. The first three of these were concerned with ensuring that a clear rationale for the research existed. The "Literature Review" provided sufficient evidence to suggest that such a rationale was present. The process of designing and running support programmes appeared to be an area not subjected to extensive study, suggesting an investigation of the process would be lead to a contribution to knowledge being made. Much of the process is conducted 'in private' by officials, but as an official engaged in the task the author was in a position to study the mechanisms involved.

The review also revealed the evidence of problems with current arrangements, and showed there was likely to be an interest in finding ways to improve the design process. Governments of the developed world spend significant levels of finance towards helping improve their industries. Finally chapter 3, section 3.4.1 had suggested that BPR be employed as an approach to help identify where problems lay with the design process, and that solutions based on the introduction of Knowledge Management represented a credible strategy for tackling difficulties (see section 3.4.2).

5.1.2 The Main Research Task

Having established that the research was likely to prove worthwhile, it was decided to continue with investigation of the design process. Chapter 1, section 1.4.1 suggested that making a contribution to knowledge and finding problem areas with the current system were dependent on obtaining a detailed description of the design process. Thus the fourth research question was put:

Discovering the Nature of the Design Process (Question iv) – "What is the scope of the process describing the designing and implementing policy for introducing and operating programmes which support firms in becoming more competitive, what comprises that process in terms of the elements which make up the whole system, and how do these elements interrelate in delivering support policy"?

Chapter 3, section 3.3 suggested that the systems modelling approach had been previously used by many researchers to conceptualise the policy process. Chapter 4, which discussed the development of the research strategy, showed in section 4.6.1 how systems modelling techniques could be employed to obtain the required description, and argued the case for using the IDEF0 modeller. The purpose of this chapter is to record the first stage in the process of building a system model of designing support policy, that is the development of a 'Top Level' (Level 1) IDEF0 diagram describing the overall process of programme design. Work centred on identifying the 'Constraints' (Controls), the 'Inputs' and 'Outputs to the process, and the 'Mechanisms' employed.

Chapter 3 pointed the way for research. Weller and Stevens (1998) had advised that it is the whole process of policy design which requires investigation. Study of the literature had enabled a 'broad brush picture' of the process to be constructed, revealing the process to comprise the principal activities of 'Issue Identification', 'Programme Implementation', and 'Evaluation including Feedback'. The "Literature Review" also suggested that 'Issue Identification' in government

comprised the process of developing ROAME statements, and proposed that the work undertaken under each of the ROAME headings be investigated. It was also revealed that DTI's *Innovation Budget Guidelines* (DTI, 1992, 1996a, 1999a) provide useful advice in this area. It was shown that the guidelines contain detailed information relating to the design and administering (implementation) of schemes. It was suggested that close study of the design process begin by reviewing more closely the 'Innovation Guidelines'. In this way existing documented knowledge could be captured and used as a foundation for building the model.

Chapter 3, section 3.3, discussed the systems modelling method, viewing it as a 'top-down' approach to analysing the design process. Government white papers were seen as an input to the process, as they convey to officials ministers' aspirations, in terms of the things that they wish to achieve. In drafting white papers, officials can receive direction from ministers as to the topics which are to be covered. The setting up of the Small Business Service (SBS) (a next steps agency), is an example. The Deputy Head of the SBS described to the author how ministers had developed the idea for the SBS within a small, private advisory group. Ministers advised officials of their wish to set up the agency, which was subsequently detailed in the white paper *Modernising government* (Cabinet Office, 1999, p. 18). Ministers may therefore be regarded as providing 'input' to the policy making process, and in turn programme design. However they are not directly involved in the design process, the task of developing programmes that deliver policy goals being the responsibility of officials (Cabinet Office, 1999, p. 15). Thus ministers may be regarded as taking a top down view.

In contrast officials engaged in the design process will interrelate with a number of actors, both within and external to the Whitehall departments. Chapter 3, section 3.3.2 highlighted the need for research to examine closely the people and their activities involved in each of the identified component processes. It was suggested that a bottom up approach be adopted, which looks at the role of the actors within DTI, and those in the policy network supporting programme design, and how they relate to the design process. In developing the IDEF0 model these requirements were kept in mind by the author. At this

and subsequent stages of the modelling process, the activities involved were studied. Members of the policy network were identified and their roles described by investigating the inputs to the design process.

5.2 Constraints on the Design Process

"*Civil servants are constrained by rules governing their behaviour, authority and sphere of influence*" (Smith, 1998, p. 65). Through acting on civil servants, these rules serve in turn to constrain the process of designing and implementing support programmes. The purpose of this section is to identify and discuss the influence of the principal constraining factors which act to limit the process.

The over riding objective for the process of designing support policy is the overall aim of achieving VFM. Chapter 2, section 2.3 referred to the objective of FMI for every department to achieve value in what they undertake (HMSO, 1982). FMI requires the Whitehall departments to put in place systems which help achieve value for money. Chapter 2, section 2.3 continued by showing how the DTI *Finance Handbook* (DTI, 1996b) makes clear that the principles of FMI apply to DTI, stating that achieving economy, efficiency, effectiveness and VFM is central to managing all activities within the department. Thus achieving VFM is an overall requirement in the design and operation of programmes, and as such represents a constraint on the process; if VFM is not perceived then approval to fund activities will not be given.

The process of policy development is also constrained by the need to conform to European Commission policy on State Aids, United Kingdom (UK) Legislation, UK Government Policy, 'Conditions set for Government Intervention', 'Ministerial Priorities', and 'Finance'. Each of these topics is now discussed in the following sections. This chapter also records the need for officials to show if at all possible, that they are able to secure wider benefits from programme funding towards enhancing VFM.

5.2.1 European Commission State Aids Policy

Actions of the member states are constrained by European Union (EU) policy (Price, 1990; Smith, 1998, p. 65; SA, 1998; DTI, 2000). Inspection of DTI's *Innovation Budget Guidelines* show them to refer to the European Commission having "*considerable powers to monitor, control, and restrict the forms and levels of aid given by all Member States to their industries*" (DTI, 1999a, p. 95).

The Competition Directorate (DGIV) within the Commission has primary responsibility for policing these state aids, and the Directorate's powers are summarised in DTI's guidelines as follows:

(i) *issuing new guidelines and frameworks to take account of the developing needs of the Single Market,*

(ii) *requiring Member States to notify proposed aid in advance for clearance,*

(iii) *requiring member States to abolish or change aid if judged by the Commission to be incompatible with the Single Market,*

(DTI, 1999a, p. 95).

Officials are informed of DGIV's role of issuing new guidelines and frameworks which set the bounds for the provision of State Aid. DTI (1996a, pp. 106-108, 1999a, pp. 95-97) refers to activities funded under the DTI's Innovation Budget are covered by the Community Framework for State Aids for Research and the Community Guidelines for Small and Medium sized Enterprises (SMEs). DTI guidance sets out a number of key points which officials must bear in mind in developing policy. Examples of restrictions are that aid for basic research must not exceed 25% of the gross project or programme costs, and that aids exceeding ECU 25

million must be notified for approval (DTI, 1999a, p. 95). The UK Government's *Guidance on European Community State Aids* (SA, 1998) highlights the wide range of activities which fall under State Aids rules. These include grants to firms for investment, R&D, training, loans and guarantees, and consultancy advice.

5.2.2 The UK Legislative Framework for Business Support

Chapter 3, section 3.2.2 suggested that Acts of Parliament were an integral part of designing and operating schemes, and how they influence the process was an important avenue for research to investigate. The HM Treasury publication *Government Accounting 1989* (HMT, 1999, chapter 2, section 2.2) shows that legal authority is required for government departments to spend money. In the normal case of a government department having a departmental minister and permanent head, for example DTI, *Government Accounting 1989* refers to officials deriving their authority to spend from the powers of their ministers. Ministers as agents of the Crown may in general exercise any powers which the Crown has power to exercise, apart from those that they are precluded from exercising through statute. HM Treasury states:

"*Although, as a general rule, Ministers are legally able to do anything which they are not specifically precluded from doing by statute, they will only be able to finance their activities if Parliament votes the money*",

(HMT, 1999, chapter 2, section 2.2, paragraph 2.2.1)

Money will only be voted to the minister if the statutory powers exist. Study of DTI's *Finance Handbook* (DTI, 1996b,), shows the powers arise from the passing of appropriate Acts of Parliament. The Acts, as well as providing the grounds by which Parliament may vote money to a department, also provide the legal authority by which a department can fund specific programme activities. The *Finance Handbook* (DTI, 1996b, chapter 5, annex 5.1.A) lists the main statutory powers (Acts) which have allowed the DTI to incur expenditure. The powers of

relevance to the programme activities which are the subject of this research are the *Industrial Development Act 1982* (IDA) (HMSO, 1982), and the *Science and Technology (S&T) Act 1965*, (HMSO, 1965). Inspection of these Acts shows that they set out the areas where the government can intervene to help industry. In this sense 'Acts' may be viewed as enablers, providing the legislative means for what departments wish to achieve.

However they may be viewed as forces of constraint, because in describing what may be funded they also place boundaries on the range of activities which the department can undertake. HM Treasury (1998, chapter 2, section 2.1) and DTI (1996b, chapter 5, section 5.1, paragraph 5.1.8) financial guidance advises that departments wishing to fund programmes not covered by existing legislation will normally have to go to Parliament for the necessary authority.

The DTI *Finance Handbook* (DTI, 1996b, chapter 5, annex 5.1.A) lists the consultancy schemes as provided for under the *Industry Development Act* (IDA). Examples are the Business Improvement Service (BIS), Business and Technical Advisory Services (BTAS), and the Advanced Manufacturing Technology (AMT) consultancies. Inspection of the ROAME statements for the Business Link initiative, (ROAME, 1994a, paragraph 5) and the Regional Supply Office programme (ROAME, 1994b, paragraph 32), shows that these schemes, which focus on the provision of information, are also funded under the Act. In an interview with Dr. Bentley, the Director of Finance and Assessment within DTI's Business Link Directorate (BLD), [Interview 14] he confirmed the reliance placed on the IDA to operate the consultancy schemes. He highlighted Part IV, Section 11.-1 of the Act which informs that:

"*The Secretary of State may make provision for the giving of advice (whether free of charge or otherwise) to persons carrying on or proposing to carry on a business*",

(HMSO, 1982, p. c52).

Dr. Bentley proposed that the above statement was also fundamental to the operation of the Regional Supply Office and Business Link schemes. Although both were principally about the provision of information to firms, such an activity can still be regarded under the heading of the giving of advice.

The *Finance Handbook* (DTI, 1996b, chapter 5, annex 5.1.A) lists Section 5 of the S&T Act, (HMSO, 1965) as authorising research and development in any of the sciences, including the social sciences or technology. Much of the work funded under DTI's Innovation Budget drew its legal authority from Section 5 of the S&T Act. Study of DTI's *Innovation Budget Guidelines* (DTI, 1992, pp. ii-iii, 1996a, pp. 23-27, 1999a, pp. 20-25) shows programme activities which drew their statutory authority from the S&T ACT to include the SMART and SPUR (Support for Products Under Research) schemes, and the former Research and Technology (R & T) Initiative. The previous Support For Innovation (SFI) scheme was also funded under the Act.

5.2.3 UK Government Policy

Policy plans are normally set out in government white papers, the drafting of which falls to a lead department, that is, the Whitehall department which has prime responsibility in the policy area concerned. As described by the Dr. Kenneth Poulter, head of DTI's Management Best Practice Directorate in conversation with the author, white papers represent ministers 'wish lists' for what they want to achieve. They set out the government's policy aims, describing in general terms, the problems faced and the strategies to be adopted in overcoming difficulties.

In the author's experience it is the responsibility of officials, in liaison with ministers, to then plan and put in place specific 'actions' to achieve policy aims (Cabinet Office, 1999, p. 15).

Officials therefore look to white papers to understand the direction they must take in formulating programmes. The importance of so doing is taken up in DTI's *Finance Handbook*, which emphasises that "*anyone considering the introduction of a new scheme or programme of assistance must first set the desired objectives against the Governments stated policy on market failure*" (DTI, 1996b, paragraph 9.1.3).

5.2.4 Conditions for Government Intervention

Price (1990), states: "*A case for government action can be made whenever an instance of market failure can be spotted*" (Price 1990, p. 160). However, he continues, government interventions are not costless, and choices have to be made. As part of policy, ministers impose certain conditions for the funding of programme activities. The DTI *Finance Handbook* kicks off the discussion by stating:

"*the Government aims not to get involved in the workings of the private sector or marketplace, and only does so if there is a market failure which justifies such intervention*",

(DTI, 1996b, paragraph 9.1.3).

The DTI *Innovation Budget Guidelines*, (DTI, 1992, pp. 16-18, and annex 3, 1996a, pp. 12-13, 35-39, 102-104, 1999a, pp. 11-12, 32-36, 91-94) describe the circumstances under which it is deemed to be appropriate for the government to intervene in the 'market'. DTI (1996a, 1999a) begin by saying that the allocation of (financial) resources for innovation and commercial activities should be primarily decided by market forces. However it is acknowledged that the government nevertheless has a role to play, and the conditions which must prevail for financial support to be justified are set out. Demonstration of these conditions is primary in a rationale for support being present.

In explaining the conditions which constitute rationale for intervention, the guidelines (DTI, 1999a) uses as the starting point that Innovation, and Management of Change present firms with many challenges and difficulties. The attempts of firms to innovate, it is argued, "*may be inhibited by a variety of failures both in the workings of market forces and the institutions, attitudes and beliefs which support the functioning of a market economy*" (DTI, 1996a, p. 12). The guidelines show how failures can also encompass failures of the 'institutions' to provide the services required, and inappropriate attitudes and beliefs held by people on how the market operates. The government, it is stated, has a role to help firms innovate successfully under these conditions (DTI, 1996a, 1999a).

Whilst not disagreeing with the line taken in the above description of 'market failure', the author approaches the issue slightly differently, giving rise to a more understandable definition. For him market failure is deemed to exist when firms and other bodies face difficulties which they do not have the means to resolve, either because of a lack of skilled resources within their organisations, or because the product or service they require is not available in the market place. They are inhibited by forces outside their control from taking action (Arnold, Boekholt, and Keen, 1999, p. 19). However, organisations simply wanting money, for example, does not represent grounds for support.

In summary, a case for intervention exists when it can be established that a failure is present in the free operation of market forces, that is, when demonstrable problems exist in the market place, which commercial and other non-governmental agencies are unable to resolve unless aided. This, the author observes, is the underlying principle which underpins any case for intervention, and is a condition which must be demonstrable in any case for support. Examples of programmes which were introduced from this perspective are the AMT Planning Studies Consultancy Scheme, the Business Links and the Regional Supply Office initiatives. These programmes aimed to stimulate the development of services aimed at addressing business

problems faced by SMEs, simultaneously with overcoming the barriers within firms to using these services.

It should be noted that in the case of the latter two examples, ministers issued a policy directive to officials indicating the type of intervention required, leaving them to then research the requirement and draft formal cases for support (see chapter 6, sub-section 6.2.3.8). The conditions comprising market failure, together with additional factors which must be considered, are now discussed in greater detail. Discussion begins with market failures identified for R & T programmes, then those for advisory schemes.

5.2.4.1 Market Failure in R & T Programmes

DTI (1992, pp. 16-18, and annex 3, 1996a, pp. 35-37, 103-104, 1999a, 32-33, 91-94) list the following categories of market failure:

(i) *Failure to take into account the wider benefits*

(ii) *Risk and Uncertainty*

(iii) *Market Access*

(iv) *Information Failures*

(v) *Public Goods*

(vi) *Lack of competition and barriers to market entry*

Each of these are now discussed, in terms of the definitions given in DTI guidance (DTI, 1992, 1996a, 1999a).

(i) Externalities or Failure to take into account the Wider Benefits

This failure describes the situation where firms are unable to appropriate all of the economic and commercial benefits accruing to the economy at large from their investment in project work (Price,

1990, pp. 196-201; ,Clark and Guy, 1998, p. 380; Arnold, Boekholt, and Keen, 1999, p. 2). Hence they will not take account of these benefits when deciding on the scope and timing of project work, or at worst whether it should go ahead at all. Therefore projects which can provide excellent returns for the Nation's investment, may not proceed, or alternatively if research work is undertaken, its scope may be restricted and potential benefits not fully realised. This issue is discussed in terms of 'Public Goods' in (v) below.

DTI guidance (1996b, 1999a) cites examples of 'externalities' as information spin-offs from applied research, and the cost of training staff who could subsequently be 'poached' by other firms. Instances of where the market failure 'failure to take into account the wider benefits' was identified is given in the case study example of the General Industrial Collaborative Programme (GICP), (appendix E, section E.2.1, p. 85). GICP was concerned with the award of grants to Research and Technology Organisations (RTOs), for collaborative research projects. Appendix K, section K.3.2.1 (p. 162) shows the 'wider benefits' to have been realised in the form of benefits arising from the projects supported, with these being passed on to RTO members. New revenue streams were also created. Appendix K also shows that in the Small Firms Merit Award for Research and Technology (SMART) and the Support for Products Under Research (SPUR) schemes, (these programmes provided grants to single companies for research and development projects), an added benefit was the encouragement of banks to advance loans to small companies to help finance their Research and Development (R&D) projects, (see sections K.3.2.2, p. 169, and K.3.2.3, p. 174, respectively).

(ii) Risk and Uncertainty

The problem is concerned with the degree of uncertainty attached to technical and commercial objectives. The distinction between risk and uncertainty is drawn. Risk is defined as the case where firms have a reasonable idea of what project work entails, and can therefore judge the probability of outcomes occurring, and hence calculate the risks involved. Examples of such instances are research projects involving on-going development of existing products and processes, where timescales are

short, that is, 'near market' research. In contrast uncertainty arises where the outcomes of activities cannot be anticipated, and the probability of outcomes is difficult to ascertain. Typically such work will involve research on novel products involving long timescales, that is, 'away from the market' research.

Guidance points out that the difference between risk and uncertainty revolves round the level of relevant knowledge and past experience that potential participants may or may not have in the area of proposed work. Thus what might be an 'uncertainty' for one organisation may be regarded as a question of 'risk' by another. Risk, it is pointed out, is also something which is perceived differently by individual organisations, and its reallocation to those who can and are willing to bear it is regarded as the responsibility of the financial markets to address rather than that of government. Collaboration is seen as one way of sharing risk. The author observes that encouraging organisations to collaborate in researching and developing new products is a commonly adopted strategy in the developed nations (Clark and Guy, 1998, pp. 382-385; Dodgson and Bessant, pp. 79-166).

Away from the market, long term research normally represents a situation where the levels of uncertainty represent high risk which prohibits firms from participating in planned work without support. Furthermore, sufficient information may not be available for financial institutions to undertake risk assessment, funding from the private sector may not be offered, thereby reinforcing the case for DTI support. An exception would be a larger firm which could easily accommodate any potential loss. Officials, in developing the rationale, must make a judgement as to whether uncertainty and high risk are present.

DTI guidelines (1992, p. 17) usefully summarises the condition of risk and uncertainty, viewing market failure as arising when the market does not handle risk appropriately. Risk and uncertainty is seen as existing when:

- companies are reluctant to invest because the timescales associated with research are long, and the deliverables are therefore uncertain. Hence participants cannot be sure they will benefit financially and are hence reluctant to invest. However the need for there to be 'reasonable' confidence that at least some companies will benefit is also emphasised as a condition of funding.

In the author's experience, officials have tended to take a somewhat more simplistic view, looking at the problem as one of *market inhibition* based on a lack of funds. In other words, although the market requires a product, the relevant SMEs, and other organisations such as HEIs and Research Associations, cannot exploit the market potential because of a lack of finance to undertake the necessary Research and Development work. A supportive view was also expressed during an interview with a fellow official [Interview 9], who added that a simplistic approach has been engendered partly because of the lack of 'risk capital'. The author is able to confirm from his experience that banks, for example, have generally been reluctant to lend money for technological projects because they did not have the correct specialist expertise to make a risk judgement. Often the provision of monies to finance R&D was conditional on DTI providing a grant (see above), the banks relying on DTI's expertise to evaluate the risks (see appendix K, sections K.3.2.2, p. 169, and K.2.2.3, p. 174, which assess performance of the R & T initiative, including the SMART and SPUR schemes).

- project work, while potentially offering a high rate of return on investment, may be of sufficiently high risk and size to prejudice the commercial viability of the organisations concerned in the event of failure, such that, without other methods of risk sharing (collaboration, raising money from the financial markets), project work will not go ahead.

- Difficulties stemming from problems of collaboration. Firms are suspicious of others motives and abilities.

The case study examples contained in appendices E to H provide instances of 'risk' being identified in the programme rationales. For example, risk was identified as a market failure in the case of GICP, (appendix E, section E.2.1, p. 85). Firms were found to be unwilling to commit funds to R&D work because of the long time horizons associated with pre-competitive research. In SMART and SPUR the rationale for funding centred around the market being excessively adverse to the high risks associated with small firms, (see appendix E, sections E.3.1, p. 88, and E.4.1, pp. 91-92, respectively). In the Manufacturing, Planning, and Implementation (MPI) programme, risk was associated with the methodologies to be used by SMEs in strategically planning their use of new technologies, as they were under researched (appendix H, section H.3.1, p. 133).

(iii) Market Access

The cost of overcoming problems associated with introducing new products to the market. Public support may be justifiable if:

- the costs associated with entering foreign markets are prohibitive for participants,

- If UK users of a product are, or might be, adversely affected by the lack of domestic supply, either from an indigenous or overseas producer.

A clear example of 'market access' having been identified as a market failure in a programme, was not found by the author. However, the March 1999 SMART ROAME statement (ROAME, 1999), addresses a similar problem. Paragraph 16 refers to the market failure of outsourcing by SMEs of R&D into innovative technologies. It is argued that the problem arises because neither the technology providers or the SMEs see the commercial case for working with each other. One means of addressing the difficulty was given as supporting SMEs to embark on innovative projects in collaboration with the technology providers, to exploit the latter's 'technologies' for commercial purposes, (paragraph 17).

(iv) Information Failures

Lack of appropriate information by participants is seen as a potential area of market failure. Markets, it is stated, will only function correctly if firms, individuals, and financial institutions have sufficient quantity of the appropriate information to perform their respective roles correctly. Information may be about technology or the marketability of technologies. DTI's wish to see this type of failure addressed is in keeping with industrial policy of many other countries, who wish likewise to see more of their technological developments exploited in the market (Clark and Guy, 1998, pp. 387-390; Guy, 1998, pp. 9 and 19).

Provision of information on a commercial basis is cited as a particular problem. The desirable spread of information generated within programmes (e.g. research results), is inhibited by the cost of collecting, structuring, and disseminating the data. User firms are also reluctant to purchase information until they become aware of its value to them (see also (v) below covering 'Public Goods'). Making firms sufficiently aware may entail the provider in giving much of its information away, such that there is little or nothing to sell. Thus providers may be reluctant to make information available. The GICP programme listed a lack of information on technical or financial potential as a market failure (appendix E, section E.2.1, p. 85). The author additionally observes that 'information failures' can also occur in the area of advisory schemes. In the Consultancy Initiatives (CI), the reluctance of SMEs to use external consultants was attributed to a lack of information on the part of small firms, of the benefits of so doing (see appendix F, section F.3, p. 97). In the Managing into the 90s (M90s) programme, (a programme promoting aimed at raising firms awareness of good practice, see appendix G, sub-section G.2.2.1, pp. 108-109), the lack of information on good practice was viewed as being a contributory factor in firms failing to develop their management competencies.

(v) Public Goods

'Public goods' are defined as "*products where consumption by one individual does not preclude consumption by another*" (DTI, 1996a, p. 102). Klosko (1990, pp. 198-199) suggests that a characteristic of public goods is their being presumptively beneficial, that is, of value to the community for whom they are intended. The development of industry standards is given as an example of a public good in the *Innovation Budget Guidelines* (DTI, 1996a, pp. 102-103). It is argued in the guidelines that it is appropriate for government to fund the dissemination of research results, including information, when research outcomes have potential to be exploited widely in the industrial community, but where project participants would have difficulty in levying economic fees to cover their costs. Klosko proposes that where a public good represents high value to a community, such as, for example, the defence of a country, then members of the community are obligated to contribute its cost. However, as discussed in (iv) above, within DTI it is recognised that firms are often unwilling to pay for information, because until they receive it they do not perceive it as valuable.

Clark and Guy (1998, p. 380) point to a further aspect of the issue. They highlight that 'spillovers' and 'externalities' from R&D and innovation work can not only benefit those who bear the cost but society more widely. Hence it is appropriate for governments to fund such work (see (i) above), (Clark and Guy, 1998, p. 382).

The 1999 SMART ROAME (ROAME, 1999) provides an example of DTI promoting a 'Public Good'. The ROAME refers to the support of the technology providers to encourage them to make statements of their capabilities via the Business Link (BL) intranet, (paragraph 23). In GICP, SMEs were able to benefit from project work through the RTOs' services (see appendix K, section K.3.2.1, pp. 163-164).

(vi) Lack of Competition and Barriers to Market Entry

New technologies can create new markets, but for those firms not up to speed with technological developments, new introductions can represent barriers to entering these markets. Firms may be reluctant to invest in what is referred to as 'best practice technologies' owing to the costs involved and their lack of experience of use. Thus their future commercial success may be prejudiced. Under these

circumstances it is regarded as appropriate to provide support. The 1999 SMART ROAME (ROAME, 1999) provides an example of this market failure being identified and addressed. Under the heading of "Technology Access Projects", the ROAME refers to "*A major factor inhibiting the transfer of technologies that enable innovation to SMEs is their reluctance to pay in advance of demonstrated effectiveness*" (paragraph 16, item c).

DTI guidance (1992, pp. 25-26, 1996a, pp. 37-38, 1999a, p. 34) lists other conditions which are prerequisites for funding. The first of these is 'Additionality' (Clark and Guy, 1998, p. 382; Arnold, Boekholt, Keen, 1999, p. 19) which must be shown to arise from any programme or project that is to receive approval. For example, 'Additionality' exists when the mechanisms within a programme cause parties to address market failures which they would not have done without governmental intervention (DTI, 1996b, section 9.3). Another example is where the award of grant funding motivates participants to collaborate in project work when they would not otherwise have done so. Other examples of 'Additionality' are the acceleration of activity timescales and the enhancement of project specifications. While considering 'Additionality', officials are required to ensure that a proposed programme does not conflict with other existing or proposed government schemes, including those operated by the EC.

Secondly a distinction is also drawn between 'demand' and 'need'. For example, industry may seek assistance from government to offset the costs of purchasing new equipment. However firms may have sufficient funds of their own, or can raise capital easily in the financial markets to resource these procurements. In such cases it is inappropriate for the government to intervene. The author observes, from his experience, that the presence of 'Additionality' is a prerequisite for all cases for interventions, be they R & T or advisory programmes. Examples of programme additionality realised in programme operation, are provided in appendix K, (pp. 162, 165-168, 171, 173, 176-179). In GICP, additionality experienced included new technologies reaching the market more quickly, and research being more detailed, (see appendix K, section K.3.2.1, p. 162). In the SMART programme additionality was found

to be high, with many firms having proceeded with development projects that they would not have otherwise been able to finance (see appendix E, section K.3.3.2, p. 167). For the Managing into the '90s (M90s), additionality was displayed by firms receiving information that they would not have obtained from other sources, (see appendix K.3.4, pp. 178-179).

5.2.4.2 Market Failure in Advisory Programmes

In talking to colleagues, the author became aware that the *Innovation Budget Guidelines* (DTI, 1996a, 1999a), because of their focus on the development of ROAMEs and the subsequent administration of programmes, are referenced for advisory schemes as well as R & T programmes. From his experience, the author suggests that there are other classifications of market failure, pertaining to advisory schemes, which are not adequately covered by the 'Innovation Guidelines'. This, the author felt, represented a problem, as inspection of the DTI *Finance Handbook* (1996b) and the HM Treasury 'Green Book' (1997) showed them not to classify market failures as precisely as the 'innovation guidance' had done for the R & T case. This was considered unhelpful. An investigation of previous schemes was undertaken, and a suggested list of market failure categories for advisory schemes drawn up. The following market failures in advisory programmes were identified:

(i) Lack of Awareness of need to Adopt Best Practice,

(ii) Lack of Commitment to Adopt Best Practice,

(iii) Absence of Required Skills in SMEs,

(iv) Reluctance to Use External Expertise,

(v) Non availability of required expertise amongst advisors

(vi) Lack of knowledge of what are the Best Practice Methodologies

The following provides a more detailed description of each of these market failures, and discusses how each of these categories was derived from the analysis of programme development.

(i) Lack of Awareness of need to Adopt Best Practice

A requirement for the adoption of good practice in management and the application of technology exists, but because of a lack of awareness of the benefits by chief executives in SMEs, they perceive no reason to take action. Both 'awareness' and 'consultancy' programmes have traditionally addressed this failure. Evidence of this market failure being cited and addressed comes from several sources. The Management Best Practice (M90s) ROAME for the first phase of the programme states:

"*A substantial and increasing body of evidence (not least from our competitors) indicates the importance of factors such as design, quality, manufacturing, management, sound purchasing policies for competitive advantage and the need for these factors to be managed in conjunction with each other as part of a comprehensive business strategy*",

(ROAME, 1988a, annex A, p. 1, paragraph 1).

The ROAME continues, "*There are still too few UK firms (particularly among SMEs) who recognise or act on this*" (paragraph 2). Appendix G, section G.2.2 (p. 108) and sub-section G.2.2.1 (pp. 108-109), discusses the topic further.

The M90s' ROAME then goes on to describe the proposed actions which will be taken to address the problem (paragraphs 8 and 9, annex A), (see also appendix G, sections G.2.2 to G.5.2, pp. 108-117). Similarly, for the previous Consultancy Initiatives, the ROAME statement (ROAME, 1988b, paragraph 2.1) cites difficulties in firms of low levels of management competence compared with foreign competitors, poor management education and training, with ability to make strategic decisions often non-existent. Again strategies for addressing the market failure are detailed (paragraphs 4.1 to 5.5). The Business Link ROAME also refers to the need to improve the competitiveness of firms "*in terms of their products, technology, management, quality, marketing, and customer focus*" (ROAME, 1994a, paragraph 6). The ROAME then describes proposals for how Business Links will, through the deployment of

'Private Business Advisors', help companies become aware of the business issues they face (paragraphs 9, 10, and 14).

(ii) Lack of Commitment to Adopt Best Practice

Lack of commitment to take action is indicated by SMEs continuing failure to adopt best practice, despite awareness of the potential benefits. Addressing of this failure can be seen from inspection of the M90s Phase 1 ROAME statement. The ROAME (1988a, paragraphs 1, 2 and 4) points to previous awareness campaigns having increased recognition in those firms participating in programme activities of 'why' they should resolve business issues, but there had been little 'follow up' action because insufficient advice had been given on 'how' problems could be tackled. How this shortcoming was tackled is detailed in appendix G, section G.5, pp. 115-118. Firms were first sensitised to the business issues surrounding the adoption of good practice, then, having been rendered receptive to new messages, they were then provided with information on how to implement the good practice methods.

(iii) Absence of Required Skills in SMEs

SMEs lack the knowledge and skills to implement best practice approaches. The Consultancy Initiative (CI) ROAME statement, (ROAME, 1988b, paragraph 2.1), as mentioned in (i) above, refers to levels of management competence being low or non-existent in firms. The CI ROAME then describes the role of CI to help make good this internal lack of specialist expertise (paragraphs 4.1 to 5.5). The ROAME statement for the Manufacturing Planning and Implementation (MPI) programme makes reference to, "*Most SMEs are unlikely to possess the necessary skills to direct and co-ordinate* (in this case) *the implementation of AMT....*" (ROAME, 1990a, paragraph 2.7). In addressing the problem of lack of skills, the award of grants to encourage SMEs to hire external consultants to make good deficiencies was the approach adopted in both CI and MPI. The reader is referred to appendix F, sections F.3 (pp. 96-97), and F.4 (pp. 98-99), and appendix H, sections H.2.4.4 (p. 131) and H.3 (p. 132)

respectively, for further discussion of the market failure and the use of external advice to help alleviate problems.

(iv) Reluctance to Use External Expertise

Their lack of skills required companies to make up deficits by hiring in external consultants. However, company boards are reluctant to commit to consultancy projects because they perceive consultancy as offering poor value, and are unaware of the benefits. The problem can be viewed as a particular form of an 'information failure', described in sub-section 5.2.4.1 (iv) above. This market failure was a principal difficulty cited in both the CI and MPI initiatives. The CI proposal, states "*...it was noted that SMEs tend not to hire outside expertise to make good their internal lack of specialist management competence in key functions (such as business planning, quality, design etc)*" (ROAME (1988b, paragraph 2.2), (see appendix F, section F.4, pp. 98-99). For MPI, referring to the high consultancy costs associated with the strategic planning of AMT implementation, this "*is likely to represent a major barrier to SMEs*" (ROAME, 1990a, paragraph 2.8) in committing to such projects, (see appendix H, section H.3.1, pp. 132-133).

(v) Non availability of required Expertise amongst Advisors

Services which an SME needs to become more competitive or maintain a competitive edge are not provided by market agencies. This was a market failure identified in drafting proposals for the MPI programme. The problem is described in the wording of the ROAME, "*The broad scope of AMT planning and implementation calls on a variety of skills, and these currently reside in a number of unrelated bodies including HEIs, systems houses, the larger consultancies, and individuals*" (ROAME, 1990a, paragraph 2.7). In developing the rationale for MPI, officials highlighted the lack of expertise in the smaller consultancy organisations to resource project work. It was argued that by encouraging independent consultants to form advisor consortia and pool their knowledge, the consultancy provision for helping firms to plan

their strategic use of AMT would be improved, (see appendix H, section H.2.4.5, pp. 131-132, and section H.3.2.2, p. 133).

(vi) Lack of knowledge of what are the Best Practice Methodologies

Many of the methodologies and procedures for the strategic planning and implementation of business operations are *generally* unknown because the areas concerned have not been adequately researched. Again, the MPI programme highlighted the existence of this type of market problem (see appendix H, sub-section H.3.2.5, pp. 133-134, which describes how the lessons were captured as project experience developed). The ROAME proposal describes the strategic planning and implementation of AMT as:

"*A complex process involving a high level of innovation. Insufficient examples are available on which to base general guidance or proven procedures for implementing AMT. At present, problems are unique to each company situation and their solution fundamental to remaining viable. To find an optimum AMT solution for a company, numerous configurations of commercially available technologies must be investigated*"

ROAME, 1990a, paragraph 2.6).

N.B. Market failure and the related topic of Value for Money (VFM) is discussed further in chapter 6, section 6.1.1.

5.2.4.3 Achieving Wider Benefits from Programme Funding

The *Innovation Budget Guidelines* (DTI, 1996a, p. 102,1999a, p. 91) informs officials of the need to seek an increase in VFM by creating activities that allow a wider audience to benefit from programme work. Typically such activities disseminate the results of research: this may form part of the R&D programmes themselves, or information may be disseminated through the department's awareness programmes. In the former case, the aim is to create a community of interested parties, with

information disseminated through activities such as newsletters, workshops, and visits to demonstration sites [Interview 11].

Instances of wider benefits being realised during programme operation are given in the case study examples contained in appendices D to H, and the examination of good practice in programme design given in appendix K. For instance the advertising campaign to promote the Enterprise Initiative (EI), raised the prestige of DTI such that the department experienced a higher rate of job applications than previously witnessed, (see appendix D, section D.5, p. 80). In the GICP programme an unexpected benefit was realised from funding research projects at the RTOs. This had allowed them to build new expertise which had enabled industry to stay ahead of the competition, (see appendix K, section K.3.2.1, p. 164). In M90s, the publication of a report commissioned by officials primarily to inform policy, had allowed a wider audience to benefit from departmental funding, (see appendix G, section G.6, p. 118).

5.2.5 Ministerial Priorities

The *Innovation Budget Guidelines* (DTI, 1996a, p. 49,1999a, p. 44) advise officials to ensure that programme plans match ministers' personal priorities, to enhance the likelihood of securing their approval. The author concurs! He has witnessed programme plans failing to obtain ministers' approval because aims ran counter to their views. Appendix G, sections G.2.1 (p. 107), and G.4.1 (p. 114), record how a submission to ministers for their approval to extend the Towards Integration (TI) programme was rejected. The draft policy to continue with TI in isolation ran contrary to the Secretary of State (SoS), Lord Young's directive that DTI's programmes should be run as part of a co-ordinated approach. It was also thought by officials that Lord Young's rejection in part was due to him perceiving TI as conflicting with the Consultancy Initiatives component of the Enterprise Initiative (EI). The SoS regarded EI as very much his 'baby', and as a result would not countenance something that might prejudice its success.

Officials reacted by submitting a new proposal, for the introduction of M90s, around six months later, which described the combining of TI with other awareness schemes operated by DTI. Proposals also demonstrated that M90s would be operated as an integral part of EI. However it was observed that M90s differed little in terms of its operational concept from TI, and it is suggested that with EI having become more established, the SoS was less sensitive to another scheme being introduced to the initiative. The subject of how officials have worked to 'make the ground fertile for approval', is discussed in chapter 6, section 6.5.

In the author's experience, officials become aware of ministers' agendas in a variety of ways. Senior officials meet regularly with ministers to discuss priority areas for policy, and discuss progress in meeting policy objectives. During such meetings senior staff will learn what is important to a minister, and cascade this information down the management chain. Records of meetings with ministers are often circulated to staff, thus apprising them of what a Minister wants to achieve. For example, section 5.2.6 of this chapter describes how following a presentation to ministers concerning DTI's Innovation Budget, ministers requested officials to provide them with information relating to the history and performance of existing programmes. The submission was circulated to senior officials, including the author's line manager who forwarded a copy to him.

A further example lies with the Business Link initiative. Dr. Peter Bentley, a PR11 in DTI's Small Business Service (SBS), was closely involved with the development and financial control of this programme. He informed the author that officials often met with the President, the Rt. Hon. Michael Heseltine, to discuss progress of the programme. Bentley himself was involved in regular meetings with Mrs. Barbara Roche, the Industry Minister in the new Labour Government, in developing the 1997 Business Link vision statement. Ministers wishes were cascaded by those officials present. The author himself met with Mrs. Roche in connection

with the Regional Supply Office (RSO) programme for which he has responsibility. The purpose of the meeting was to seek the minister's views on whether funding for the programme should be extended beyond 31 March 1998. The minister expressed her wish to see support for the RSOs continue, but for a period of two years only. The period of two years was arrived at based on the need to provide reasonable employment prospects for RSO staff on the one hand, while providing an opportunity to review the RSOs' role in the light of emergent Regional Development Agency policy, on the other. The author observes that officials will also consult with staff in the private offices of ministers, who, having direct contact with the minister, will often be aware of his or her views.

5.2.6 Finance

The availability of funds inevitably constrains the process of programme design. It is useful at this stage to look at how budgets are set within DTI. The DTI *Finance Handbook* states:

"*The DTI has financial authority delegated to it by the Treasury; this is a further constraint (beyond the Supply Estimates voted by Parliament) on the Department's freedom to incur expenditure in pursuit of its policies and objectives*",

(DTI (1996b, paragraph 2.1.3).

HM Treasury's delegated authority, it is explained, permits DTI to spend and commit expenditure on its policies and objectives. However, particularly for programmes, there are specific constraints placed on funding. This is of particular relevance to the subject of the research in this thesis, and is discussed further in chapter 6, section 6.4, in relation to gaining approval for programmes.

Financial management in the DTI is decentralised (DTI, 1996b, section 2.1). In common with other departments, responsibility to incur expenditure is delegated in the first instance to the Permanent Secretary as the Accounting Officer. In DTI the Accounting Officer has appointed

the Director General (formerly referred as the Deputy Secretary or as a Grade 2) of the Resources and Services Command to take overall responsibility for spend. The Director General carries the title of the department's Principal Establishment and Finance Officer (PEFO). The general responsibility for the co-ordination of spend is assigned to the Director of the Financial Resource Management (FRM) Directorate, which is under the PEFO's command.

DTI (1996b) explains that there are two criteria which require to be satisfied before an official can commit to expenditure. They are the existence of delegated authority to commit expenditure and a budget allocation. Delegated authority comprises principally the authority to commit expenditure, approve or certify expenditure, and finally to authorise payments. For programmes, sub-delegations of financial authority are made by FRM to the directors (formerly officials at Grades 3 and 5 levels) of the individual directorates within DTI, who in turn will sub-delegate again down their management chains. The directors are referred to as the 'Budget Holders'. They are responsible for the financial administration of the funds allocated to them. The author observes that the process of allocating budgets is one of negotiation, involving discussions between the directors and FRM.

The role of the Individual Programmes Committees (IPCs) is also discussed (DTI, 1996b, section 3.4). The Departmental Management Group (DMG) (see chapter 2, section 2.3) has as part of its responsibilities the supervision of programme expenditure, and it is the job of the IPCs to support the function of DMG by monitoring spend in specific programme areas. Each IPC is chaired by the relevant Budget Holder, whose directorate provides the secretariat. Members of an IPC will normally include a representative from FRM, and staff having responsibility for programme evaluation (see also chapter 8, section 8.5).

The *Finance Handbook* DTI (1996b) describes the remit of the IPCs as to regularly review the cost effectiveness of programmes for which they have responsibility. The *Finance Handbook* continues:

"*They examine programme ROAME statements for individual programmes and projects, consider evaluation findings, and, where appropriate, recommend changes to the financial provision for a particular scheme or changes to the allocation of resources between schemes*",

DTI (1996b, paragraph 3.4.7).

The author observes from his own direct involvement in attending IPCs, that the above description does not fully describe the role of an IPC. Observation of interactions between IPC members shows that discussions are not restricted to talking over the financial issues. IPCs also place emphasis on the practicalities of proposed interventions, looking at the credibility of a Rationale, and the ability of proposed delivery strategies to negate market failure, for example. The operation of IPCs is discussed further in chapter 6, section 6.4.2. The Innovation Budget within DTI provides a very good example of how budgets are allocated and managed. The *Innovation Budget Guidelines* (DTI, 1999a, pp. 43-48) describe the current process of allocating funds and gaining approval within the Innovation Budget. The guidelines begin by emphasising that funds are limited, and therefore it is necessary to ensure that spend is directed towards the highest priorities. The Innovation Budget Management Unit (IBMU) has the responsibility of building a strategic focus into the running of the Innovation Budget.

The task of setting the Budget strategy begins in March of each year, with the preparing of a strategy paper by the Innovation Policy and Standards (IPS), Technology, Economics, Statistics, and Evaluation (TESE), and the Innovation Research and Technology (IRT) directorates, and IMBU. The paper recommends the innovation themes to be supported, and proposes the financial apportionment to each theme for the next but one financial year. In drawing up the paper, ministerial priorities are taken into account. Early drafts of the papers

are discussed with the individual directorates having an interest in the Innovation Budget, and their comments incorporated.

The next stage is to invite the Directors General (formerly referred to as Grade 2 or 'Deputy Secretaries') whose commands have within them directorates concerned with innovation support. Their comments included, agreed strategy papers are then submitted to the Departmental Steering Group (DSG) to take account of their views. Once these have also been incorporated, the strategy document is submitted to ministers before Parliament's 'Summer Recess' for their approval. The author observes from reading copies of minutes between ministers and officials, that drafts of the paper are submitted to and discussed with ministers well before the recess, to 'test their minds' on what is being proposed.

Study of communications with ministers shows them to be fully involved in shaping the final strategy, requiring modifications to initial proposals. For example in an 8 June 1999 submission to the Secretary of State, the Innovation Budget Holder refers to an initial presentation to him by officials, and responds to a request for information relating to the history of existing programmes and their performance. The submission then seeks agreement for a further presentation on the proposed way forward, once officials have investigated the options further.

As a person who had been directly involved in setting budgets within the previous Business Link Directorate of DTI, the author asked Dr. Bentley for his insights into the allocation of funds to programmes. Bentley considered that programme budgets are set on the basis of 'what went before', the calculation of costs of running particular scheme elements, and the availability of funds. For example, when establishing the Business Link network officials began on the basis that the previous TEC (Training and Enterprise Councils) enterprise budget had amounted to £32,000,000. The President, the Rt. Hon. Michael Heseltine, had indicated

his wish to see the introduction of specialist counsellors, that is the Innovation and Technology, and Design Counsellors, into the Business Link network. The additional element of necessary grant, was calculated on the basis of the salary (including overheads) of providing one each of these specialist counsellors in every Business Link throughout England.

Bentley commented that support for the specialist counsellors was provided from DTI's innovation budget, where the request for funds had to compete with other priorities. The President saw that there was sufficient need to justify funding one of each type of counsellor in a Business Link, but not more. Bentley also observed that a determining factor in arriving at the required level of funding is often the identification of the minimum level of support necessary for an intervention to be effective. For example, operation of the Regional Supply Offices had shown that they could provide a good level of service with a budget of around £4,000,000 per year. Both Bentley and the author observed that this experience led to the level of funding being maintained in successive extensions of the RSO budget.

A further example of how budgetary constraints impact on programme design can be seen in the development of the MPI programme, in the setting of the objectives for the initiative (appendix H, section H.3.3, pp. 135-136). The budgetary authority in DTI had provisionally agreed a spend of £10,000,000 for MPI which, after taking out administrative costs of £1,850,000, left around £8,000,000 to fund grant expenditure. Assuming consultancy fees to average £100,000 across the projects supported, and given a grant funding level of 50%, officials were constrained to setting a target of supporting 175 projects.

5.2.7 Universal Application of Constraints

The author has found from experience that officials acknowledge the need to adhere to government policy at all times in their work. Such adherence not only applies to ensuring that programmes conform in every respect to policy statements set out in white papers, but also to

making sure that European Commission policy is adhered to, that they are conformant with legislation, and also meet funding conditions including allocated budgets.

Although not specifically stated in the 'Guidance', the DTI guidelines indicate this to be the case, advising project officers in preparing ROAMEs to ensure that the department's "*policy provides for the support envisaged*" (DTI, 1999c, p. 29). Thus it can be concluded that the 'policy constraints' identified for the overall process above will commonly apply at every, individual stage of that process. Thus in the chapters which follow, the topic of 'Constraints' is not discussed separately as part of describing the component processes of the design system.

5.3 Inputs to the Design and Administration Process

From his experience of being involved in the development of programmes, the author of this thesis is able to point to a number of sources of information which are employed in the process of scheme development and administration. These are now discussed.

5.3.1 Evaluation Reports

HMT (1997) and DTI (1996a, p. 43, 1999a, p. 42) guidelines advise that the results of programme evaluation be fed back into the decision making process for future schemes. Examples of officials taking account of lessons learnt can be found in programme ROAME statements. The ROAME Statement for the Consultancy Initiatives (CI), (ROAME, 1988b, paragraph 2.3), in defining market failure, draws on evaluations of previous advisory, that is consultancy, schemes (see appendix F, section F.3, p. 97). Similarly the Manufacturing Planning and Implementation studies programme (MPI) ROAME Statement (ROAME, 1990a, paragraph 3.4), in setting the programme objectives for the dissemination of the programme lessons, refers to the results of evaluating the Inside UK Enterprise Scheme which had shown this latter initiative as an effective technology transfer mechanism. The 1999 SMART

ROAME (ROAME, 1999, annex D, paragraphs 4 and 5), explains how the 1994 evaluations of SMART (DTI, 1994a, p. 17) and SPUR (Support for Products Under Research), (DTI, 1994b, p. 17), had concluded that the second phase of SMART differed little in its objectives and rationale from SPUR, and that the two should be combined. The ROAME continues by reporting that the recommendation was implemented in 1994. The topic of evaluation reports providing information to the design process is discussed further in chapter 6, sub-section 6.2.3.1.

5.3.2 Literature

From his experience the author is aware that officials sometimes read professional journals, reports, and academic papers to help gain an understanding of market problems and keep abreast of developments in industrially related research. The MPI programme offers an example. The ROAME (1990a, paragraph 2.3), in developing the rationale for the programme, derived evidence of the need for firms to use Advanced Manufacturing Technologies, by pointing to the benefits highlighted in a series of articles (Management Today, 1989 pp. 68-96). Appendix H, section H.2.2, (p. 129), shows how the articles helped seed the idea for the programme by showing how the performance of firms can be improved through the correct use of technology. The author observes that it is not common practice for officials engaged in the design process to research the literature, a topic that is discussed further in chapter 6, sub-section 6.2.3.2 (see also Interview 13).

5.3.3 Cabinet Office Advisory Committees

The reports produced by Cabinet Office Advisory committees have often provided direction to the design of programme strategies and their content. The MPI ROAME (1990a, paragraph 2.2), in building the rationale, refers to an internal paper drafted by the Emerging Technologies Sub Group of the Advisory Council On Science and Technology (ACOST), which pointed to the rapid advancements in manufacturing technology providing opportunities for increased

competitiveness at an affordable price for SMEs [Interview 6]. Encouragement of firms to adopt these technologies was therefore indicated. Appendix H, section H.2.4.1 (p. 130) discusses the point further. Section H.2.4.2 (p. 130) details how evidence contained in an ACOST report suggested that a firm's use of technology must be fully integrated into a strategic plan, for it to be applied effectively (ACOST, 1991, pp. 11-13). ACOST's observations helped shape the requirement in MPI for firms to adopt a holistic approach to planning their use of Advanced Manufacturing Technology (AMT). The role of advisory committees in informing the design process is discussed in more detail in chapter 6, sub-section 6.3.3.1 of this thesis.

5.3.4 Dialogue with External Bodies

In day to day liaison with external bodies having a knowledge of industry, for example Research and Technology Organisations (RTOs) and Higher Education Establishments (HEIs), officials become aware of market problems. Outside organisations can also provide advice on how problems can be countered. Appendix E, section E.2.1.1 (p. 85), refers to information supplied by the RTOs forming the basis for officials in drafting ROAME statements. In an interview with Mr Richard Arnott, a Grade 7 in DTI's Management Best Practice (MBP) Branch [Interview 11], he highlighted the importance of talking to external bodies including industry, in determining failures in the market. When interviewing Mr. Peter Munday [Interview 9] he supported Arnott's views, recording that dialogue with firms themselves, HEIs and RTOs, can flag problems to DTI. This has also been the author's experience.

Mr. John Sutton, the PR10 responsible in DTI for operating TCS (formerly referred to as the Teaching Company Scheme), was able to provide the author with an example of an HEI advising on programme delivery. A university representative advised Sutton that it was important in securing academics' participation in the scheme, to emphasise that TCS projects were of the right quality to attract income that can be included in the 2001 Research Assessment Exercise submissions. As a result of receiving this advice, Sutton included in a promotional leaflet targeted at academics, a bullet point highlighting

the fact. Dialogue with external agencies is also discussed in chapter 6, sub-sections 6.2.3.4 and 6.3.3.2.

5.3.5 Experience of Colleagues

When employed in DTI's Manufacturing Technology Division (MTD) the author had responsibility as a Professional and Technology Officer, Level 1, (PTO1) for designing the MPI Programme. During the design process the author and his manager at section head level (Grade 6), met with the Grade 7 in DTI's Enterprise Initiative Division (EID) who was responsible for the operation of the Consultancy Initiatives. The purpose of the meeting was to ensure that the target population of firms to be supported by MPI did not overlap with that focused upon by CI. EID were able to confirm, from the monitoring of CI, that limits placed on the level of grants offered had rendered the schemes unattractive to larger SMEs. The majority of CI applicants had been SMEs employing one hundred staff or less. Thus MPI, where it was planned to offer higher levels of grant funding, would be able to provide support attractive to the group of larger SMEs who were not currently catered for, (see appendix H, section H.3.2.8, pp. 134-135). A further example is given in chapter 6, sub-section 6.2.3.5.

5.3.6 Personal Experience

Officials will inevitably be influenced by their experience of running programmes and projects. For example, the use of independent programme advisory panels to steer programme delivery and on-going development of programmes was introduced as a concept by the scheme contractor responsible for operating the MPI programme. On closure of MPI, the advisory panel was considered as having made a valuable contribution to the performance of the programme by the author and his colleagues. Subsequently, in 1997, the author drew on this good experience and introduced the concept of advisory panels into the Regional Supply Office (RSO) programme, for which he had responsibility. When he was working for Dr Melvyn

Draper (Grade 6), the latter informed the author that he drew on his experience of running schemes in formulating plans for the introduction of MPI, (see chapter 6, sub-section 6.2.3.5).

5.3.7 Experience of Scheme Contractors

Organisations contracted to operate programmes gather a wealth of experience, which can often be usefully applied in the design process. In the author's experience, contractors can be helpful in two ways. Firstly, in drafting ROAME statements, they can provide valuable advice relating to market problems and the administrative procedures to be adopted. Secondly, contractors are able to call on their experience in developing strategies for the administration of programmes for which they are assigned responsibility [Interview 8]. When developing the MPI programme, the author consulted the Production Engineering Research Association (PERA). From their experience of operating the Manufacturing Initiative within CI, PERA were able to advise on the importance of vetting consultants to help ensure the quality of their work under the scheme. They also advised that MPI should maintain a database of listed consultants, to speed the process of matching consultancy companies to the needs of SME applicants. This advice was adopted in MPI, (appendix H, section H.5.2, pp. 138-139). PERA were also able to provide DTI with statistics for DTI's Manufacturing Initiative, which indicated that SMEs employing over 100 staff represented a small proportion of applicants. This helped officials demonstrate that in targeting the larger SMEs, MPI was meeting a market need (section H.3.2.8, p. 135).

Experience of scheme contractors can also be usefully applied to positively benefit the running of new programmes. In setting up and operating DTI's SUPERNET initiative (a network designed to help specialist counsellors in the Business Links locate specialist sources of expertise for their clients), PERA were able to call on their experience gained in operating the Manufacturing Initiative. For this scheme PERA had developed and run a system for indexing the skills held by consultancy organisations, as part of managing the listing of consultants (see

Interview 8). The system was adapted for SUPERNET to record the skills held in the centres of expertise such as HEIs and the RTOs.

PERA were also able to call on their skills gained from operating previous schemes, in other areas. Through operating the Manufacturing Initiative PERA had gained skills in project and consultancy monitoring, together with knowledge of managing 'short-term' contracts effectively. PERA were also able to search the database which had been built under the Manufacturing Initiative, to help identify potential centres of expertise to participate in the SUPERNET network. The organisation was also able to exploit its enquiry service, and the Small Firms Technical Enquiry Service which it also ran on behalf of DTI, to help SUPERNET users obtain the help that they required. (These observations are based on the author's experience of introducing SUPERNET, and discussions with Mr. Philip Sowden, the member of the PERA team responsible for managing the SUPERNET contract).

5.3.8 Experience of Best Practice Practitioners

Consultants and other organisations involved in projects related to installing best practice into firms can, through their 'first hand' experience, provide knowledge relating to market problems and advice on how strategies should be developed for the resolution of those difficulties. A minute dated 5 September 1990 to the Head of the previous Manufacturing and Technology Directorate (MTD) states how, in drafting the rationale for MPI, officials interviewed several consultancy organisations. These organisations informed officials that planning the strategic use of Advanced Manufacturing Technology (AMT) was a complex task, and required the use of senior consultants, (see appendix H, section H.3.1, pp. 132-133). The high fees involved they advised, would be likely to deter SMEs from committing to such projects. Discussions also helped officials identify that the necessary expertise was limited to about six organisations, requiring intervention to increase the supply side (appendix H, sections H.2.4.5, p. 132, and H.3.3.2, p. 136).

5.3.9 Commissioned Research

Officials often commission consultants and other bodies to undertake research into market failure and to suggest strategies for the negation of difficulties. In the interview with Arnott [Interview 11] he provides an example of officials gaining knowledge in this way. In developing the Computer Aided Engineering (CAE) and Small Scale Computer Integrated Manufacturing (SSCIM) programmes, an external consultant ISTEL was commissioned to review the international status of CAE and CIM (Computer Integrated Manufacturing) technologies. Among the market failures identified by ISTEL was that the requirements of the growing number of Japanese inward investors could not be met by many of the UK's sub-contracting firms. The subject of commissioning research is discussed further in chapter 6, sub-section 6.3.3.3.

5.3.10 Government White Papers

Section 5.2.3, above, discussed the importance of schemes being conformant with government policy. In chapter 3, section 3.3, it was suggested that white papers are an important input to the process of designing schemes, and their role should be studied. White papers contain statements of government policy. In designing and administering schemes, officials therefore consult relevant white papers to obtain the 'steers' they need in developing schemes. Inspection of the CI ROAME statement (ROAME, 1988b) provides an example of officials referring to white papers in building programme rationale. The ROAME refers to the 'DTI White Paper' placing great importance on the need for more effective business development, and how CI was supportive of government aims by seeking to improve the situation of poor management in SMEs (paragraph 1.1), (see also appendix F, section F.3, pp. 96-97). The role of white papers is further discussed in chapter 6, sub-section 6.2.3.9.

Further examples on how information is used to inform the design process is given in chapter 6, sections 6.2.3 and 6.3.3. Additional examples are also discussed in the case study examples given in appendices D to H. How use of these sources is exploited internationally by others in the public sector is also observed (Arnold, Boekholt, and Keen, 1999, pp. 20-21).

5.4 Mechanisms

Ranky (1990, p. 19), and Peppard and Rowland (1995, pp. 172-173) describe the mechanisms as depicted in the IDEF0 modeller, as the entities which describe how the function is accomplished. The HM Treasury 'Green Book' (HMT, 1997), the DTI *Finance Handbook* (1996b), and the DTI *Innovation Budget Guidelines* (DTI, 1999a) represent the principal mechanisms employed in programme design, (see chapter 3, section 3.3.1). They act to steer officials through the process of developing the rationale for funding, by informing the reader of the steps which must be undertaken and the information which must be provided at each step to ensure that the criteria for interventions are shown to have been met.

Reference to the above mechanisms is again commonly made by officials throughout the design process. As discussed in section 5.2.7 above, in relation to the universal application of 'constraints', the guidelines are similarly employed throughout the design and implementation process. This is necessary as the guidance they provide contains statements of policy, and hence it is 'policy' that they always be applied to the process.

5.5 Outputs

The introduction of programmes results in activities being supported whose aim is to reduce the identified market failures (DTI, 1999a). Hence delivered activities are one class of output from the design and implementation process. Inspection of the *Innovation Budget Guidelines* (DTI, 1999a, pp. 41-42, 67-70) reveals that as part of 'Evaluation', monitoring and evaluation reports

are also produced, and may thus also be classed as policy deliverables, that is, the 'outputs'.

Figure 5.1 below displays the IDEF0 Level 1 diagram constructed from the above analysis.

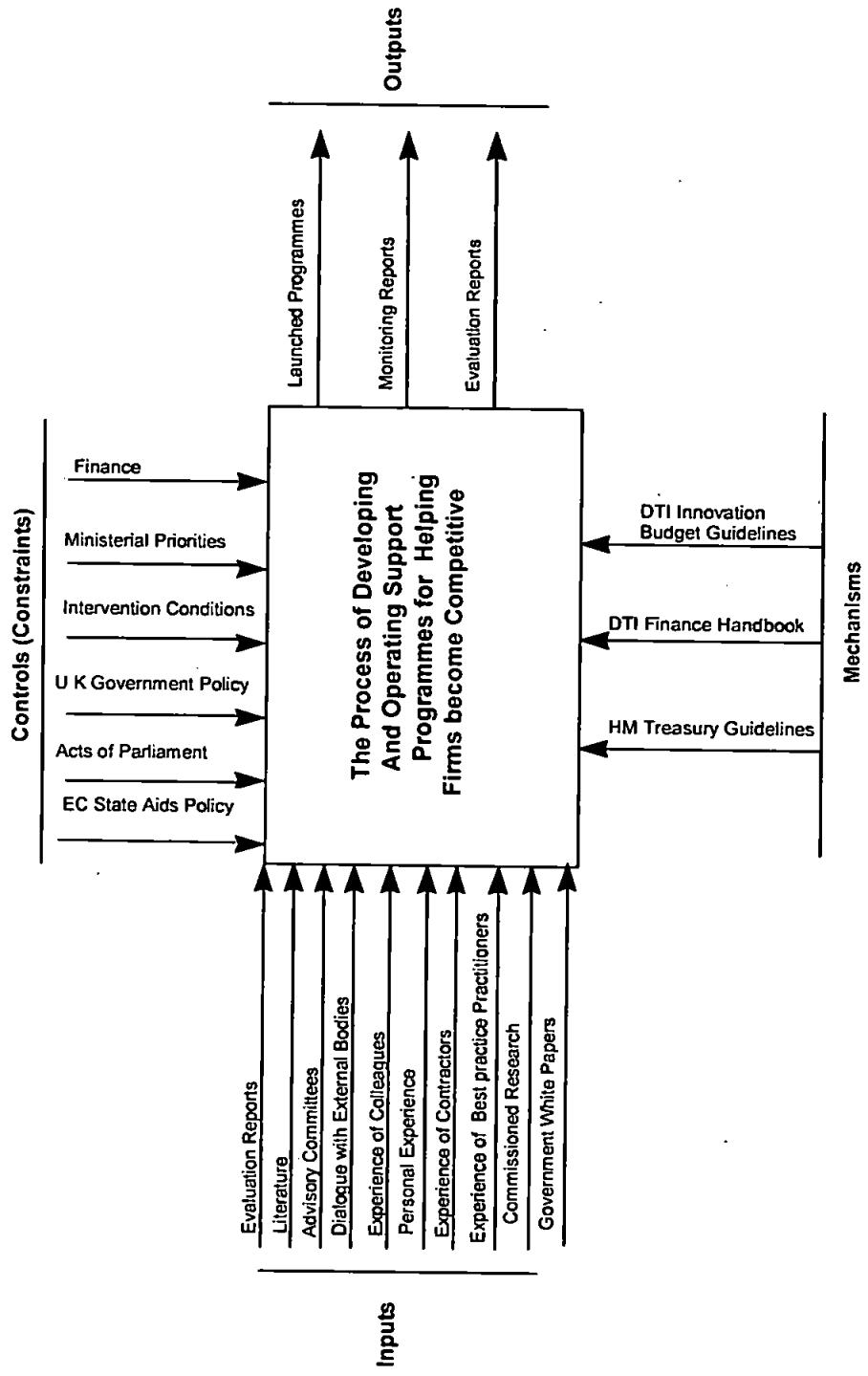

Figure 5.1 The Process of Programme Development and Operation Top Level (Level 1) Diagram

5.6 Conclusions

The first stage of mapping the process of designing and administering support programmes has been completed. An IDEF0 top level diagram has been developed, which provides a detailed overview of the process (figure 5.1 above). The inputs to the process, the constraining factors, and the outputs in the form of delivered programmes and evaluatory reports, have been identified. Based on the work of the literature review recorded in chapter 3, it has been argued that the guidelines issued to officials in introducing schemes form the principal mechanisms employed in the process (section 5.4).

Chapter 3, section 3.3.2, had suggested a 'producer network' of various agencies extended around DTI, which supported the department in carrying out its various activities. It was argued that in discovering the nature of the process of designing and administering support programmes, it was necessary to investigate how these agencies interact with the design process. Section 5.3, which looked at the inputs to the design system, has begun the process of identifying the actors involved, and their roles in informing the process of designing support policy. Inspection of the players identified so far reveals a number of different types of organisation to participate in the process. These include HEIs, consultants, RTOs, and companies, with which officials interact in developing and running programmes. Research has additionally revealed that actors in this 'programme network' have roles to both inform the design process, and deliver activities on behalf of government. Studies also indicate that it is possible for actors to perform in both of these capacities, for instance as in the case of the RTOs.

It is observed that the structure of the programme network conforms with that described by Rhodes, in describing producer networks. The above analysis provides some insights into the nature of the relationships between the participants and officials. Such organisations function as providers of well informed advice to civil servants, as they are able to draw on their experience of delivering programmes, and servicing the needs of small companies more generally. Importantly, the programme

network has also been shown to extend internally within government, to include the networking of officials themselves. Within the internal section of the network, officials employ their personal experience and that of others to help them design schemes that will meet the market requirements. Section 5.2.3 suggested that internally the programme network also involves ministers. An example lies in the annual setting of budgets where officials discuss the priorities for funding with ministers (section 5.2.6). It would seem that a variety of literature sources are consulted in the process, including white papers, evaluation reports, and the reports of advisory committees.

It has been found that officials design and operate programmes within a strict set of bounds, defined by a number of constraining factors (section 5.2). For example section 3.2 in chapter 3 suggested the role of Acts of Parliament in providing for schemes should be studied, in respect of their role in the design and running of programmes. Their role has been shown to be vital to the process. Without the appropriate regulatory framework in place, ministers and officials cannot appropriate funds to operate schemes. Acts determine what can be done, and by inference, what cannot be implemented. It was further shown that two 'Acts' have been prominent in programme development within DTI, these being the *Industrial Development Act 1982*, and the *Science and Technology (S&T) Act 1965*. Knowledge of the scope of these Acts by officials is therefore paramount in them developing new initiatives that are likely to receive approval. Policy has been shown to be a second and important area of constraint. EU, and UK Government Policy must be adhered to at all times. Forming part of policy, there is a need to demonstrate failures in the market that the markets themselves cannot resolve, for there to be a rationale for intervention. Finally, the scope of programme activities is constrained by the availability of finance. The next chapter, chapter 6, continues the development of the IDEF0 model, by investigating the first of the three component processes, that is 'Issue Identification'.

CHAPTER 6

ISSUE IDENTIFICATION

6. ISSUE IDENTIFICATION

6.1 Introduction

Chapter 5 described the development of an IDEF0, Level 1 diagram, which provided an overall description of the process of designing and implementing support programmes. The factors constraining officials in carrying out the process, and the sources of information which they use to obtain evidence of market failures were detailed. It was also shown that the *Innovation Budget Guidelines* are a principal source of reference for officials, which steer them through the design and administration of schemes. The main outcomes of the process are launched programmes and evaluation reports.

Chapter 3, section 3.3, revealed that the overall process of programme design and administration, comprised the three components of 'Issue Identification', 'Implementation', and 'Evaluation and Feedback'. This chapter continues the task of mapping the process, by looking in detail at the mechanisms employed in the first of these components, 'Issue Identification'. The aim is to take the first step in responding to the fourth research question raised in chapter 3, section 3.8.3 as follows:

Research Question (iv): **Discovering the Nature of the Design Process** – "What is the scope of the process describing the designing and implementing policy for introducing and operating programmes which support firms in becoming more competitive, what comprises that process in terms of the elements which make up the whole system, and how do these elements interrelate in delivering support policy"?

This chapter contributes to responding to this issue, by answering the supplementary question:

(a) Regarding Research Question (iv): **Discovering the Nature of the Design Process** –

"What are the mechanisms involved in 'Issue Identification'"?

Chapter 3, section 3.3.1, had provided some insights into the process. The *Innovation Budget Guidelines*, (DTI, 1992, 1996a, 1999a) revealed the identification of issues to be primarily concerned with the development of ROAME statements. Drafting of ROAMEs enforces a structured approach to the process, and it was suggested that the work undertaken in addressing the issues under each of the ROAME headings be studied. It was suggested that further inspection of the *Innovation Budget Guidelines* would be useful in uncovering what is entailed.

Inspection of the 'Innovation Guidelines' shows the approval of programmes to be discussed as an activity which is separate from programme design. Weller and Stevens (1998) had proposed that the overall process be continuous in nature, running right through from 'Issue Identification' to 'Evaluation'. From his personal experience and observing others the author would concur. He has found that the 'approval' stage is an integral part of proposal development. When ROAMEs are first submitted for approval, those judging the case for support will often recommend changes and/or additions to improve the strength of the case. This process is discussed in section 6.4.2 below, where examples are also given. For this reason 'Approval' was treated as an integral part of 'Issue Identification'. Discussion of the how the approval process helps shape programme development takes place in section 6.4, below.

The following sections describe the analysis of the component process of 'Issue Identification'. To aid the reader in following the process through, Figure 6.1 below contains a flow chart describing the elements comprising the process, and their sequence in the task. The flow chart is based on the findings of the analysis described in this chapter.

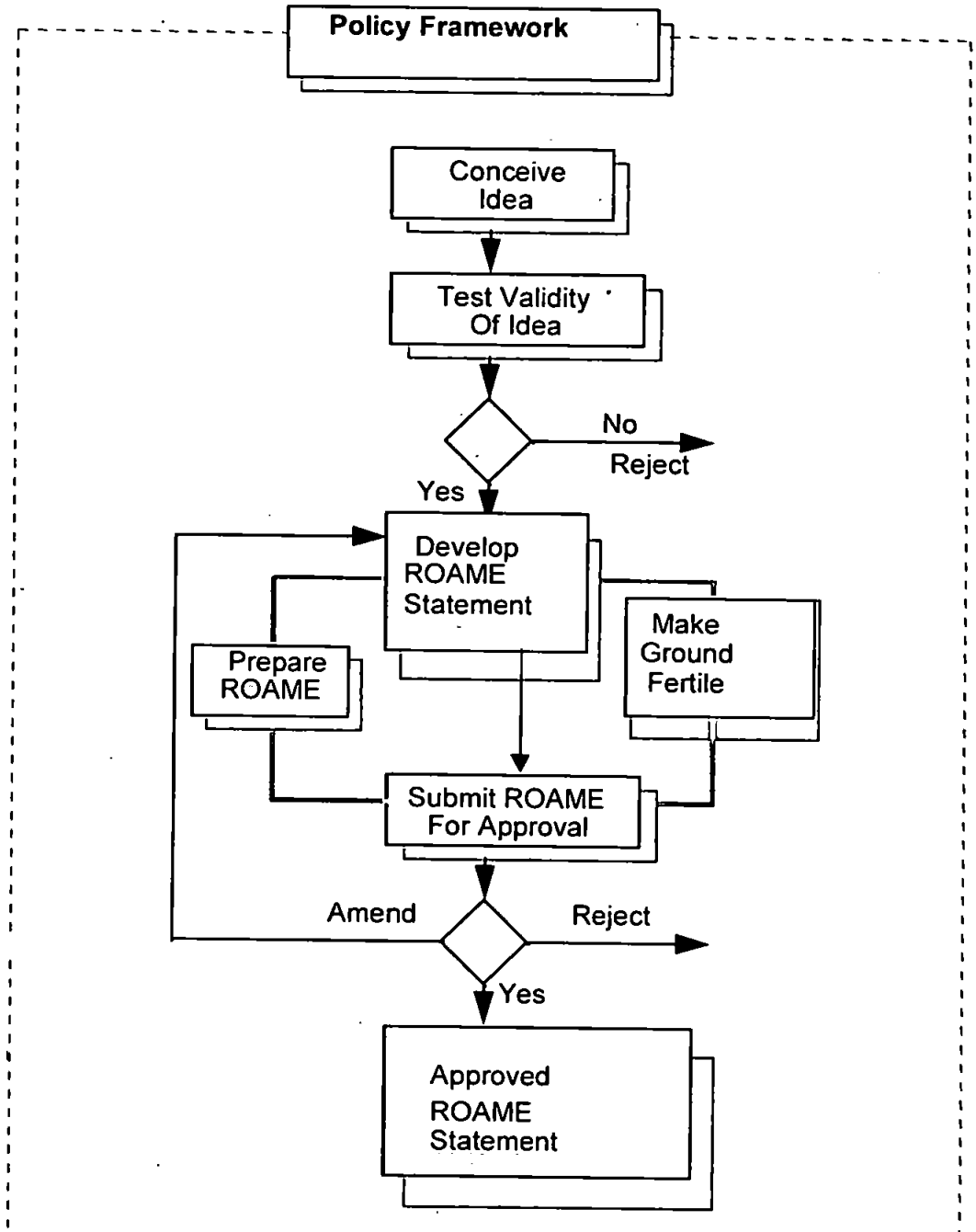

Figure 6.1 Flow chart of the Process of Issue Identification

6.1.1 Perception of Market Failure and Value for Money

Chapter 5, section 5.2.4 discussed how the presence of market failure is a condition for government intervention. Before embarking on a discussion of how the cases for support (ROAME statements) are developed, it is perhaps useful to first debate the subject of how officials interpret market failure, in the context of designing and administering support programmes. The author would argue that the starting point is the government's wish to achieve Value for Money (VFM) in the undertakings of the Whitehall departments. The white paper *Efficiency and Effectiveness in the Civil Service* (HMSO, 1982, pp. 2-3), refers to the government pursuing a policy to achieve good management throughout the civil service. As part of this management policy the white paper continues by highlighting its aim to secure better value for money. The DTI *Finance Handbook* (DTI, 1996b) takes up the theme, stating "*Value for money in government is about ensuring that tax payer's money is used efficiently, economically and effectively*" (section 4.1, paragraph 4.1.8). Conceptually, the handbook continues, the objective is to achieve the best outputs possible, at acceptable levels of quality, at the lowest cost. That these aims apply to all DTI's activities, is emphasised. Attainment of VFM is thus a prime consideration for officials in designing and operating programmes.

The Treasury 'Green Book', (HMT, 1997, pp. 59-65) sets out the principles to be applied in deciding when it is appropriate to intervene in private sector markets. As a rule, government departments should not intervene unless it can be shown that the resulting costs and outcomes represent an efficient use of resources. Economic efficiency, the guidance continues, "*can only be improved if government intervention is able to successfully correct some market failure*" (p. 59). The conditions representing the categories of market failure were discussed in chapter 5, section 5.2.4.

During the course of his investigations, a researcher in the public policy arena conveyed to the author that some people view market failure as a contentious subject. The author discussed

this comment with Dr. Peter Bentley, a PR11 in DTI's Small Business Service (SBS), for his views. Dr. Bentley was approached as he has substantial experience in the introduction and evaluation of programmes (see interviews 14 and 15). Bentley did not consider the identification of market failure to be a contentious issue among economists and other officials within the department. Rather, he felt problems arise because people do not always understand the underlying principle governing the condition of market failure. He suggested as an example, officials treating SMEs as not being able to afford advice as an instance of market failure. Companies not affording advice Bentley suggested, is not an indication in itself of the market failing to operate correctly. Not wanting to afford something is a subjective decision, heavily influenced by peoples' personal views of life. Some people will be prepared to pay for certain things, while others will not.

Conversely a situation that does demonstrate the market not working properly, and therefore a case of market failure, is a company saying that it does not like a market offering, and hence will not test it, even though it has not tried it. Bentley argued that firms not wanting to use consultants at the full market rate because they are distrustful of their value, is an example. Because they have not tried using consultants small firms are unaware of their added value. In other words, small firms lack the necessary information about what consultants can do for them, that is, an information failure exists (see chapter 5, sub-section 5.2.4.1). Interestingly, Bentley added that whilst ministers will set policy objectives, he felt that they do not think in terms of market failure. The need to substantiate the rationale of subsequent programmes in terms of clearly defined market failures, was essentially the domain of officials.

The Treasury indicates the importance of achieving VFM in designing support programmes. The Treasury 'Green Book' (HMT, 1997, p. 63) refers to the need for public expenditure on programmes or projects being cost effective in achieving policy objectives. Cost-effectiveness is stated in the 'Green Book' as being "*the ratio of policy outputs of a project or programme*"

(p. 63). In analysing programme ROAME statements and evaluation reports, the author observed that an attempt to measure value for money in this way is not undertaken (see section 6.3.2 – Step 4, below). Dr. Lambert (PR11), a senior economist in DTI (see Interview 18), supports the author's observations. In an E-mail to the author (dated 18 October 2000), Dr. Lambert related how evaluations would assess VFM in terms of their findings on the validity of programme rationale, the adequacy and attainment of objectives, additionality, displacement, and instances of wider benefits that have been realised. Conclusions are debated and so, Lambert observes, "*there is no monolithic calculus of VFM that derives directly from evaluation evidence*". The author suggests that the approach adopted in DTI remains nonetheless generally conformant with the Treasury's policy, the Treasury stating that the "*most basic condition for cost-effectiveness is that the activity supported should actually occur*" (HMT, 1997, p. 63).

In talking to Dr. Bentley, he was able to provide some reasons which contribute to the impracticalities of measuring VFM in absolute terms. Agreeing with Lambert, he proposed that assessment of VFM was not a scientific process. Perception of VFM having been achieved, Bentley argued, will depend on several factors. To begin with, the perception of value will depend on the views of individuals, who will hold differing views on what VFM represents. Next the views on VFM change with time, as they are strongly influenced by the policy climate, and ministerial priorities at the time of assessment. Expanding, Bentley observed that different ministers have different priorities, which broadens out the policy climate. Ministers change positions and incoming ministers will often have different priorities from their predecessors. Hence the perception of what represents VFM will change in line with changing aspirations.

Priorities can also change with time as a result of experience of implementing policy. He cited as an example the changes in emphasis in help for business start-ups and SMEs in recent years.

In the early 1980s there was considerable support provided for 'start-ups' under the previous Enterprise Allowance Scheme, which aimed to encourage unemployed people to start up their own businesses. People who had been made redundant and wanted to start their own businesses could receive an income from the government for up to one year. The scheme, suggested Bentley, turned out to be very expensive in terms of improving the economy, and no longer was politically acceptable. Hence it was not perceived as representing good value for money, and in consequence political emphasis was shifted in the early 1990s towards providing support for existing businesses, and the Enterprise Allowance Scheme was essentially dropped.

The introduction of the Business Links was a manifestation of the shift towards support for existing SME businesses, this now being perceived by ministers as offering better VFM. The author observes that the change in policy from focusing on start-ups to placing emphasis in developing existing SMEs is an example of the phenomenon referred to by Lindblom (1977, pp. 313-317) as 'incrementalism', (see chapter 3, section 3.5). Now, under the present Labour government, policy priorities have again moved back towards providing support for start-ups. The government has stated its aims to promote the formation of high growth start-ups, and to help micro businesses grow as part of its social inclusion agenda (Stationery Office, 1998, pp. 48-49; Cabinet Office, 1999, pp. 16, 18, 26-27). These alterations in priorities, Bentley argued, serve to show that judgement of VFM does not arise from some elemental law, but is instead subject to ministerial policy. Bentley also pointed to ministers and senior officials being influenced by the presentational aspects of any decision to fund any programme. There is hence no obvious benchmark. One's only benchmark therefore is what ministers are trying to do, and in turn what is regarded as 'important', and hence value for money.

In commenting, Bentley suggested that there would inevitably be differences between the views of the Treasury and DTI, towards what represents VFM. Bentley regarded the Treasury as more detached from the 'real world' than officials in DTI, who are in frequent contact with

business, and so consequently tends to take a 'hard line'. Bentley's observations align with those of Lipsey (2000, pp. 11-12). Lipsey highlights how Treasury officials frequently receive proposals from the spending departments to use public monies to fund various projects, which are often rejected. He suggests that the departments are under siege from pressure groups, anxious to encourage the government to embark on activities which they consider to contribute to the public good.

Finally, during an interview with Dr. Lambert (Interview 18), he indicated that different interpretations of value for money can be placed on the findings of evaluation reports. Lambert suggested that budget managers might interpret findings as implying that value for money had not been realised, whereas the programme manager may suggest that the programme is addressing a perceived need and, with modifications, can be operated to achieve VFM. The author is able to quote an example from his own experience, which demonstrates a similar conflict of opinion. The Regional Supply Office (RSO) programme operated by the Business Link Directorate (BLD) of DTI, was subjected to an independent evaluation in 1997 by Pieda plc (Pieda, 1997). Pieda found the programme not to represent value for money, on the basis of the manner in which the RSOs were currently operating (p. 117), (the RSOs were essentially performing a purchaser/supplier matching exercise in a non-strategic way).

The economist responsible for the evaluation in BLD, in meetings debating the future of the RSOs, expressed the opinion that the programme should therefore be dropped. However officials responsible for operating the programme felt there to be a clear need for the RSOs. They instead concentrated on the recommendations of the evaluation report, which suggested that a clear rationale would be seen as being addressed, and hence VFM achievable, if the RSOs prioritised their work and became more involved in supply chain activity (pp. 117-123). Officials put up a submission to ministers for continued support, arguing that VFM would be

achieved if the operating guidelines for the programme were modified in accordance with Pieda's recommendations. Ministers gave their approval.

It was mentioned above that in the Treasury guidance (HMT, 1997, pp. 59-60), a rationale for intervention is dependent of there being the presence of a market failure. Guidance then continues by stating that it is therefore necessary for officials to demonstrate that a market failure is present, and further, that the means to correct it exist. How the task of satisfying these criteria is carried out by officials is the central theme of this chapter, and the topic is discussed in sections 6.2.3, 6.3, and 6.3.1 to 6.4.2 below.

6.2 Conception and Validation of Programme Ideas

Section 6.3 below discusses the process of drafting ROAME statements. It is shown that the structure of the process can be deduced from study of the '*Innovation Budget Guidelines* (DTI, 1992, 1996a, 1999a). However from his experience, the author was aware that the sequence of stages as suggested by the guidelines is incomplete. Witnessing the development of initiatives shows there to be a preliminary sequence before embarking on the development of programme proposals. First ideas for schemes are born as a result of officials considering how best they may help firms. These ideas are then validated before proceeding to the formal development process. The purpose of this section is to look at how ideas for programmes emerge and are then validated, before moving on to the development of cases for support, that is, the drafting of ROAMEs. Conceiving ideas is suggested by the author as the beginning of the task of identifying the issues.

6.2.1 Conception of Ideas

An important objective for government is that UK firms are competitive in world markets, and government is seen as having a critical role to play in helping companies compete better (Stationery Office, 1998, pp. 10-11). It is the job of officials to translate the government's political vision into programmes which deliver outcomes (Cabinet Office, 1999, p. 15). Ideas for new programmes thus arise out of officials monitoring the market, looking for instances of businesses performing uncompetitively, and finding ways to encourage improved performance.

Businesses and governments alike operate in an economic environment which is becoming increasingly global and dynamic (PA, 1993, section A; Peppard and Rowland, 1995, pp. 25-27; Drucker, 1995; Cliffe, 1999, pp. 18-19). Thus officials must continually observe the market, and stay aware of changing conditions which precipitate situations in which firms become uncompetitive. However, in thinking about how problems can be resolved, officials will only consider those which can be regarded as conditions of market failure, that is, those difficulties which are unresolveable without government intervention (see chapter 5, section 5.2.4).

6.2.2 Validate Ideas

If a potential case for intervention is thought to exist, authorisation is then sought to build a full case for support, that is, develop a programme ROAME statement. The request for authorisation is usually presented to senior management in the form of an internal minute, briefly setting out the case. In his experience the author has found that senior staff prefer such minutes to be short and succinct, no more than two sides of A4 paper. With pressures on their time, senior officials constantly remind their staff that they are unable to put effort into reading long and complicated texts. The author observes that long detailed proposals at this stage are inappropriate anyway. Only an outline proposal is justifiable, since the evidence is not fully researched and is therefore preliminary in nature.

Observation of minutes setting out potential cases show them to describe the perceived market failures, summarising the preliminary evidence. Outline approaches for alleviating the failures are suggested, and a 'ball park' figure for the programme budget given. In parallel with its submission to line management, the outline case is circulated to all other staff having an interest, inviting their comments. Budgetary authorities are additionally consulted at this stage to check the availability of funds, and in order that proposed expenditure can be taken account of in planning departmental expenditure. Management normally authorises a scheme to proceed in a replying minute.

The author observes that senior management judge the viability of proposals on the basis of their wide range of personal experience, and in the light of the comments received from other staff. Their comments, added to those of others, help develop initial thinking. Outline proposals may be modified in the light of comments received and resubmitted. This process also provides the added benefit of guiding officials as they begin to write the ROAME statement.

Officials have a second motive in consulting widely. Consultation provides the opportunity to begin making the 'ground fertile for approval', improving the chance of final endorsement for what they wish to undertake. The author also observes that failure to first validate ideas greatly increases the risk of a subsequent ROAME statement being rejected at the approval stage, and the effort expended thus wasted. From his experience the author is able to quote the Manufacturing, Planning, and Implementation (MPI) programme as an example of where the above process was adopted in developing ideas for a scheme (see appendix H, section H.2.3, p. 129). Inspection of 'the files' shows the procedure to have also been adopted in developing the Programme for Competitive Manufacturing. Further examples of how ideas for schemes are developed, including the case of MPI, are provided in the case study examples given in

appendix D section D3, p. 78, appendix E, sections E.3.2, pp. 88-89, E.4.1.1, p. 92, appendix F, section F.2, p. 96, appendix G, section G.2.1, pp. 107-108, and appendix H, section H.2.2, pp. 128-129, and H.2.3, p. 129).

6.2.3 Inputs to the Process of Conceiving and Validating Programme Ideas

Chapter 5, section 5.3 discussed the sources of information interrogated by officials in the design and administration process, and provided a few examples. This section looks again at these sources of evidence in the context of how they can help prompt ideas for new programmes.

6.2.3.1 Evaluation Reports

Chapter 3, section 3.5 introduced the role of evaluation reports. Chapter 5, section 5.3.1 summarised how they inform the overall process of designing and administering schemes. Importantly they can also provide information relating to the continuing nature of market failures, or highlight new problems which have come to light during the operation of a scheme, thus feeding ideas for interventions. Examples of officials taking account of previous evaluations in developing ideas can be found from inspection of programme ROAME statements. The ROAME proposing Phase 2 of the Managing into the 90s' (M90s) programme (ROAME, 1991a, paragraphs 5 and 6), refers to the evaluation study of the first phase of M90s as confirming the market imperfection of SMEs not being aware of good business practice, and how to implement it, (see appendix G, section G.2.4.2, p. 112).

6.2.3.2 Literature

Business related articles in the national 'broad sheets', business magazines and specialist journals can 'flag' emergent problems. Papers published by the research councils can also

represent rich sources of information relating to market failures. The MPI programme, which is discussed in appendix H, provides an example of where literature sources were a primary influence in shaping ideas. Appendix H, section H.2.2, p. 128, shows how a paper prepared for the Economic and Social Research Council (ESRC), cited a general decline in productivity which had accompanied the increased use of technology (Fleck, 1988). This observation indicated problems in the way firms were managing the introduction of the new technologies, (see also Interview 5, pp. 391-392). An article in a business magazine *Management Today* (Management Today, pp. 68-96), had shown how the appropriate use of technology could bring about significant benefits in productivity (appendix H, section H.2.2, p. 129). Along with other sources of evidence, these observations led officials to believe that there was a failure of firms to implement technology correctly, and that it was worthwhile for DTI to intervene in the market to help correct the problem and thus aid SMEs to improve their performance.

However the author observes that it is unusual for officials to refer to the literature for information relating to evidence of market failure. An interview with a senior economist in DTI [Interview 18] suggests reference to the literature to represent good practice, but there appears to be no systematic referencing of professional and research publications by officials. The author therefore suggests that insufficient use has been made of such sources, a point alluded to in an interview with Mr. Frank Rott (a PR10), [Interview 13]. Rott considered that programme rationales would be better founded if greater reference to the literature was made in the development of ROAME statements. He himself had not called on the literature in the development task, and considered that most others did not also. The author consulted several of his other colleagues. They were unanimous in saying that they did not consult the literature when developing programmes. In forming an opinion on problems reliance is almost solely placed on other sources of information, such as consultations with firms, Higher Education Institutions (HEIs), and the Research and Technology Organisations (RTOs).

Whilst discussing the use of different information sources with other officials, the author took the opportunity to ask them if they weighted the information received, dependent upon source. The reply received was that no such process of differentiation was undertaken, all the information sources used were listened to and treated as being equally of value in providing evidence of market failure. During the course of his research the author was asked to consider whether particular officials are influenced by specific information sources. The view of colleagues was that those involved in the development and approval process were influenced by precisely the same information sources. Bentley had an interesting observation to make. He suggested that officials at all levels are influenced by a number of information sources, which creates a 'level of noise' in debate between officials. From the 'noise' certain issues begin to dominate and then attract general support for considering their resolution.

6.2.3.3 Cabinet Office Advisory Committees

In talking to colleagues and examining his own experience, the author found little hard evidence to suggest that the advisory committees were actually responsible for the initiating of a programme idea [Interview 17]. However they represented an important influence in the design process, being an important activity in supporting the development of programme rationale. This is discussed later, in sub-section 6.3.3.1.

6.2.3.4 Dialogue with External Bodies

Conversations with external bodies having a knowledge of industry is one of the ways that officials become aware of problems [Interview 11]. The topic was introduced in chapter 5, section 5.3.4. From his own experience the author observes that officials work hard to achieve regular dialogue with these organisations, developing and maintaining strong links with their staff. During the course of these conversations problems are flagged and often ideas for how issues may be addressed are discussed. The nurturing of links with people helps engender a sense of comradeship with officials, reducing

inhibitions to put suggestions forward. Regular dialogue also provides officials with plentiful opportunities to apprise external bodies of DTI's agenda, thereby placing their staff in a better position to flag issues which are relevant to the department's agenda.

Examples of organisations with whom officials liase are the SMEs themselves, Higher Education Institutions (HEIs), Research and Technology Organisations (RTOs), and Trade Associations. For example, in a discussion with Mr. Reginald Allen, a Grade 7 responsible for developing several programmes under LINK, he informed the author that ideas for new LINK programmes arose as result of discussions with the (previous) Science and Engineering Research Council (SERC), HEIs, and Industry. Consultancy organisations are a further source of information about problems faced by SMEs (see appendix H, sections H.2.4.4, p. 131, and H.3.1, pp. 132-138).

In the case of R&D orientated programmes, it has been the author's experience that officials will understandably tend to focus attention on research bodies such as HEIs, and the RTOs. For advisory programmes the emphasis is more on talking to consultancy based organisations and agencies concerned with the delivery of best practice. However these are generalisations: Business Schools within HEIs can for instance, advise on the wider issues which may of interest in developing an advisory scheme. An example of the latter is the involvement of Sheffield Business School in a DTI led, EU funded programme, to deliver business training in the Czech Republic. Sheffield are involved as consultants to plan and manage the delivery of training of government personnel, and staff within manufacturing firms. Their selection to take part in the programme was based on their expertise gained from running courses in business training over the years.

Additionally, as the result of careful nurturing by officials, people who see difficulties arising often contact DTI as the first port of call, as they see it as the organisation best placed to help. Officials also extend specific invitations to external bodies to talk to them either at DTI, or at their own office. These meetings often produce ideas, also help build relationships with staff in the organisations concerned,

and encourage them to turn to DTI officials when they have a problem to discuss. Officials also capitalise on the fact that they may be in a position to offer financial assistance. They ensure through their daily contacts with organisations that people are made aware of the funding which is available. Thus, for example, organisations seeking funds to help fund R&D projects they wish to undertake, are motivated to call officials and discuss their programme ideas. In so doing they may suggest market failures of which officials were unaware [Interview 9].

Mr. Peter Munday, a PR9 in DTI's Small Business Service, was able to provide further examples of dialogue with external bodies helping to seed new ideas for schemes. In the late 1980s, the University of Leeds through their research work had picked up ideas for developing a standard for data interchange between manufacturing computer systems. The university's research into how organisations would want to use technology in the future had shown that the integration of computer based systems was key. Leeds had observed that people were currently generating similar sets of data, but on different suppliers systems which were incompatible, and would therefore, not communicate with each other. It was further observed that the process of transferring data between the various incompatible systems was inefficient. Data had to be re-entered manually, and errors occurring whilst keying in data had then to be subsequently discovered and rectified. Leeds discussed with officials the idea of a project to develop a data exchange standard, which would allow information to be exchanged between systems independent of the supplier of the hardware or software.

DTI funding resulted in the setting up of the Computer Aided Data Exchange Centre (CADEC), and the development of the data interchange standard STEP (Standard for the Exchange of Product model data). The centre also provided a test bed for suppliers of systems, and additionally helped inform DTI of what businesses wanted. Munday observed that funding the CADEC project was sympathetic to DTI's wish to see the UK's expertise built up in CAD and data exchange, and have a world voice in these areas.

Munday was able to identify other examples. He related how the Shoe and Allied Trades Research Association (SATRA) would regularly come forward with proposals for the research and development of manufacturing tools, methods and processes, based on consultation with their members. One such proposal, and one which subsequently received funding, was for the development of a Computer Aided Design (CAD) system to design plastic lastes, employed in shoe manufacture. Traditionally wooden lastes are used in shoe making which then need to be stored. Storage of the lastes, and the time taken in their production, were problems identified by the RTO. The project aimed to have lastes made in plastic which would allow them to be fabricated quickly, and using digitally stored data would remove the overhead of physically storing the wooden tools. On another project an SME supplier of manufacturing system software proposed to officials the idea of a project for researching the requirements for manufacturing scheduling software, to improve production management processes.

The author was approached by different SMEs to fund the research and development of systems to control the cold forming of metal strips in a metal rolling process, and systems to control the sequencing of metal parts through the baths in the plating process. Another instance lies with the Electrical Research Association (ERA), who came to the author with their ideas to develop FIELBUS, a standard to enable electronic control data to be exchanged between hardware modules controlling production machinery. ERA had observed that existing control systems from different manufactures could not be easily interfaced with each other, thus preventing them being interconnected via a communications network. This was regarded by the RTO as a problem, as to be able to monitor and update the control parameters centrally via a network would increase production efficiency. ERA wished to build on an existing standard for monitoring instrument data, and develop a standard that would allow hardware controllers to inter-communicate, independent of the source of the supply of the hardware. A further example lies with the British Constructional Steelwork Association (a trade association), who

discussed their ideas for DTI to fund the development of CAD software tools, for application in the steel fabrication sector. In all of these examples, cases for support were developed, support received, and project work successfully completed.

6.2.3.5 Personal Experience

Ideas for novel approaches in support programmes can emerge from the schemes themselves. In 1990 the author began working for Dr. Melvyn Draper, then a Grade 7 in DTI, supporting him in the development of the MPI programme. Dr. Draper informed the author that the germ of the idea for MPI developed as a result of his experience of running the previous AMT Planning Studies Consultancy Scheme (NEL, 1992). During the later stages of the programme a few of the consultants had begun to take the wider business perspective in carrying out their projects. Where a more strategic approach to consultancy had been taken, it was noted that the client firms were experiencing greater impact from their projects. Thus Dr. Draper began thinking that a scheme centred round helping firms take a holistic approach to planning their AMT implementations would be worthwhile.

6.2.3.6 Experience of Colleagues, Scheme Contractors, and Best Practice Practitioners

The author suggests through observing the design process, that officials tend to draw more on the experience of colleagues, scheme contractors, and best practice practitioners, in the process of developing ROAMEs. This is discussed further in section 6.3 below.

6.2.3.7 Commissioned Research

Again the author observes from his own experience of designing programmes, and from the experience of colleagues, commissioning of research to determine market failure is normally undertaken as part of building ROAME statements (see section 6.3). However an example of

where such research helped spawn an idea came to light during a conversation with Mr. John Oakley, who heads the department's Regional and SME Management Support Unit. Oakley informed the author that a study commissioned by DTI into ways of developing databases on suppliers, whilst not leading directly to the launch of a programme as intended, did however help inform the design of Partnership Sourcing, a collaborative activity with the Confederation of British Industry (CBI).

Inspection of the report shows work to have begun in April 1990, with the market failure perceived as:

"*UK buyers being hampered by inadequate information (on suppliers), and little was being done to examine the subject and find appropriate remedies*",

(DTI, 1991a, paragraph 2.1).

The commissioning of research is discussed further in sub-section 6.3.3.3 below.

6.2.3.8 Ministers

Mr. John Cammell, Head of DTI's Manufacturing Technology Division (MTD), advised the author that ministers do not usually interject such as to initiate new programmes [Interview 2]. However there are exceptions to the norm. Examples are the introduction of the Regional Supply Office and Business Link programmes. In an interview, Timothy Roberts, manager of the Regional Supply Office (RSO) in the West Midlands [Interview 16], reported that the idea of setting up the RSOs was born as a result of a request from the Rt. Hon. Michael Heseltine MP, when President of the Board of Trade (he preferred this title to Secretary of State).

In November 1993 the President attended a dinner with senior industrialists in Scotland, and was asked by one of the large corporates why his companies could obtain help in sourcing suppliers in Wales and

Scotland but not in England. As a result of the conversation, the President asked his officials to look into the possibilities of setting up a sourcing service in England, something which he was keen to see. In the case of the Business Links programme, the President, following his appointment, asked officials to set up what was originally known as the 'One Stop Shops', [Interview 15]. The idea was originally described in the Labour Party's 1992 election manifesto, (Labour Party, 1992).

A further example of a ministerial interjection arose in a second interview with Mr. John Cammell, held in 1991, [Interview 3]. The author was informed that the then Minister for Industry, the Rt. Hon. Douglas Hogg MP, had become concerned over an emergent underspend on DTI's R&D budget. During a meeting with Mr. Brian Murray, then Head of the Research and Technology Policy (RTP) Division, the Minister asked officials to investigate ideas for new schemes. This had paved the way for the introduction of new initiatives. According to Cammell, he, as Head of MTD (Manufacturing Technology Division), had previously placed policy proposals to the Secretary of State, Lord Young, which were resurrected as a result of the Industry Minister's request.

6.2.3.9 Government White Papers

Chapter 5, section 5.3.10, introduced the role of white papers in providing guidance regarding government policy towards support for businesses. The author is however not aware that white papers have been a principal source of new ideas. Rather they are employed as references to back programme rationale. For instance, as discussed previously in chapter 5, section 5.3.10, the Consultancy Initiatives (CI) ROAME statement refers in its introduction to the DTI White Paper (HMSO, 1988), placing "*great importance on the need for more effective business development*" (ROAME, 1988b, paragraph 1.1), (see also appendix F, section F.3, p. 97). The role of white papers is studied later in sub-section 6.3.3.5. However the act of drafting white papers can be instrumental in promoting new ideas. The author along with others has on numerous occasions been asked by colleagues responsible for drafting

white papers for ideas on new initiatives. Such requests provide officials with opportunities to promote their ideas for addressing problems. Ideas can be put forward and, if accepted, will appear in the published documents, and henceforth become part of accepted policy. The officials who initiated the ideas will then take forward these proposals, developing and launching new activities.

The need for ministers to have things to announce in white papers also helps officials argue subsequent cases for approval. Examination of the SUPERNET programme files shows the members of the Innovation IPC having their attention drawn to such a need, when appraising the case for the second round of funding for the scheme.

6.2.3.10 Outputs

As discussed in the preceding section 6.2.2, the 'output' of the process of conceiving and validating ideas is written approval from senior managers, in the form of a minute to their staff asking them to proceed with the formal development of programmes. (Approval can sometimes be given verbally).

6.3 Develop Programme ROAME Statements

Chapter 3, section 3.3.1 identified that the task of 'Issue Identification' is mainly about the development of ROAME statements. Section 3.3.1 showed the development of ROAMEs to be an 'accounting' process, in which well researched arguments for support are put forward, the objectives to be achieved described, and the planned expenditure justified. ROAMEs also facilitate the processes of 'Monitoring' and 'Evaluation' by defining the problems which are to be addressed, and the strategies proposed for their reduction.

An interview with Dr. Melvyn Draper, a Grade 6 in DTI's former Manufacturing Technologies Division (MTD) [Interview 5], provided some additional background to the role of ROAME statements. Draper pointed to ministers not normally having technical or industrial expertise

(Hennessy, 1990, pp. 487-488), and their time to consider the issues surrounding cases for interventions being limited. These factors taken together leaves them vulnerable to criticism. Introduction of programmes could give rise to political criticism, through a lack of debate of the issues surrounding their introduction preventing potential problems from being pre-empted. The ROAME approach addresses the problem by thoroughly researching the issues involved. The author observes that production and submission of programme ROAME statements forms part of the civil servant's role to advise ministers (Hennessy, 1990, pp. 494-495; Weller and Stevens, 1998, p. 579).

This section examines in detail the work within each step of building the case for support, showing how the evidence of problems is obtained and findings presented, such that the rationale is well researched and hence defensible. Drafting cases for support involves developing initial ideas, and building on the preliminary evidence which has been gathered to provide a substantial and credible argument for why proposed activities should be funded.

Chapter 3, section 3.3.1 revealed the function of drafting ROAMEs to be a sequential process, conducted in the order of discussion in the *Innovation Budget Guidelines* of each of the ROAME topics, that is, 'Rationale', 'Appraisal', 'Objectives', 'Monitoring', and 'Evaluation and Feedback'. From his experience of drafting ROAME statements, the author is able to confirm that, in practice, work in developing ROAMEs is carried out essentially in accordance with the order in which these topics are introduced in the guidelines. Examining the overall process revealed that research is not simply aimed at identifying the market failures but also at *understanding* the nature of problems and how best they may be solved. The approaches adopted to gain such understanding were therefore also analysed. The research mechanisms which have been employed in R & T programmes and advisory schemes were noted, together with the reasons for their adoption. The information sources and methods employed in seeking the evidence were also investigated.

For the purposes of analysis, the activities involved in preparing ROAMEs may be grouped into three primary areas, those concerned with developing programme rationale, those concerned with setting objectives, and those associated with 'Programme Implementation', that is, 'Appraisal' and 'Monitoring', and then finally 'Evaluation including Feedback'. Again from his own experience and from observing colleagues, the majority of effort is seen to be expended in developing the 'Rationale'. The work undertaken in developing each section of ROAMEs is now discussed.

6.3.1 Writing the Introduction

Each ROAME must be prefaced with an introductory section, outlining the contents of the document. Drafting of the "Introduction" sections of ROAMEs is relatively straight forward, the task limited to that of writing a summary of the ROAME contents. Guidance (DTI, 1996a, p. 35, 1999a, pp. 31-32) advises officials that the introduction should be of a single page in length, and then lists the essential features to be contained within a ROAME. Among features listed are the overall objectives, what is to be undertaken and by whom, costs, start date and programme duration.

6.3.2 Developing Programme Rationale

DTI guidelines state "*the central purpose of the rationale is to argue the case for support*" (DTI, 1992, p.16). As discussed previously in chapter 1, section 1.1, DTI's remit has tended to concentrate on helping firms in the industrial sector to become more competitive. Inspection of ROAME statements shows programme rationales reflecting the government's competitiveness agenda, with delivery strategies pivoting around encouraging SMEs to take action to improve their competitive positions. For example in the LINK programme on Measurement and Instrumentation (ROAME, 1993, paragraphs 4-6), the rationale hinges around the identified need for the 'measurement instrument

industry' to develop innovative measurement equipment to meet the requirements of users. The ROAME continues by highlighting the importance of the instrument industry developing "*in step with market requirements and maintain or improve its existing international position*" (ROAME, 1993, paragraph 6).

The rationale for the New SMART Scheme points to SMEs, in developing new products, investing too little in the innovative technology "*which will improve their competitiveness*" (ROAME, 1999, paragraph 13). For Business Links, they are described as "*part of a broader aim to improve the competitiveness of all firms*" (ROAME, 1994a, paragraph 6), while for the network of Regional Supply Offices their role is introduced as "*a contribution to improving the competitiveness of industry*" (ROAME, 1994b, paragraph 1).

In developing 'Rationale', the *Innovation Budget Guidelines* (DTI, 1996a, pp. 35-39, 1999a, pp. 32-36) 'set the scene' by referring to the presumption by officials, that, in general, markets operate to produce the goods and services which people require. Thus intervention at public cost is only justifiable when defects can be identified in the operation of 'market forces', which condition the running of firms. The guidelines advise that the 'Rationale' must therefore illustrate how the market is failing to deliver economic benefits by explaining what the problems are, how they arise, the consequences for economic performance, and why the market forces cannot be expected to resolve issues. The guidelines also state that officials give reasons why improvements will not come about without government intervention. However study of programme ROAMEs shows that this issue is not directly addressed in the statements. Instead the rationale for intervention is implied by situations of market forces not acting to resolve problems. The guidelines continue by advising that the 'Rationale' describe proposals for correcting or offsetting market failures, including how the chosen delivery mechanisms will operate to negate problems.

Study of DTI guidance, programme ROAME statements, and the author's experience of observing the development process, suggests that building of 'Rationale', in both R & T and advisory programmes, can be described as a four step, sequential process. The steps involved are shown in Figure 6.2:

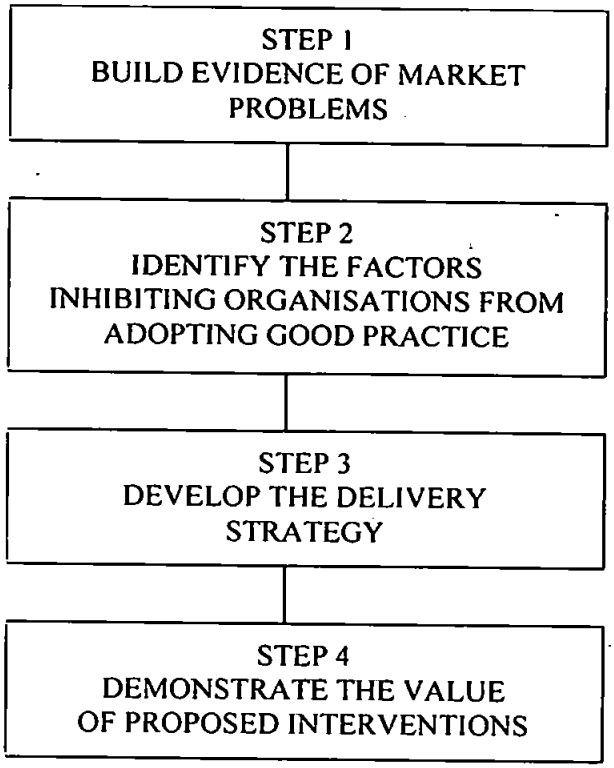

Figure 6.2 The Process of Developing Programme Rationale

The work which is undertaken at each stage is now discussed. The author observes that Steps 1 and 2 together, are concerned with determining the nature of market failure.

Step 1: Build Evidence of Market Problems

This stage is concerned with collecting the evidence of symptoms in the marketplace that suggest that SMEs are uncompetitive. The author observes that officials look for two groups of evidence. The first is associated with trading, with a lack of competitiveness indicated by factors such as organisations experiencing reductions in market share, poor export performance, or a failure to bring forward new products which the market requires.

The second group is concerned with identifying instances of organisations not adopting good business practice, or exhibiting poor business characteristics such as low levels of management skills. Display of either of these conditions is taken to imply a state of uncompetitiveness. The author deliberately refers to organisations rather than specifically companies, as problems are not confined to the business sector. Examination of ROAME statements reveals that sometimes firms being uncompetitive can be taken in the trading sense as 'a given'. For example the Business Links statement (ROAME 1994a, paragraph 6) informs the reader of the Business Links' role in improving the competitiveness of SMEs "*to respond to the challenges of the 1990s*", but without reference to evidence demonstrating the state of uncompetitiveness.

However ROAMEs will often describe evidence of trading issues. The ROAME for the LINK programme on Measurement and Instrumentation refers to "*The demands of the market served by the instrumentation industry are simultaneously evolving and becoming stringent*" (ROAME, 1993, paragraph 5). The ROAME then continues by explaining the need for the 'measurement instrument industry' to develop innovative measurement equipment to meet the requirements of users who have to increase plant efficiencies and ensure conformance to new environmental legislation (paragraphs 5 and 6). In justifying the introduction of support for very small firms and inventors, the ROAME for the New SMART Scheme (ROAME, 1999, paragraph 18) refers to the failure of many ideas to be commercially exploited, as ideas are abandoned at an early stage in their development.

For the purposes of developing a model for the design process, it would be 'neat and tidy' for it to be found that officials, having identified symptoms of uncompetitiveness, then work to discover the underlying reasons. Although from his experience the author witnessed this sequence in developing the rationale for MPI (see appendix H, section H.2.4, pp. 129-132), alas, analysis of practice more generally shows things are not quite so straight forward. As introduced above, officials also look for evidence of firms not adopting the good practice approaches which they should, or displaying poor

business characteristics, as implying evidence of uncompetitiveness. Such evidence itself often represents the starting point in identifying a rationale.

For example the Business Link ROAME (ROAME, 1994a, paragraphs 9 to 11) cites uncompetitiveness as arising from factors such as firms not investing in training in business skills, and poor co-ordination of business support services which creates difficulty for firms seeking the right sources of information. The CI ROAME (ROAME, 1988b, paragraphs 2.1 and 2.2) writes of firms not having the systems to take strategic decisions, and not tending to use consultants to improve their management. In R & T programmes, failure to deploy good practice is often represented by organisations not investing sufficiently in research and development (HMSO, 1988, pp. 2, 33). Or it may be that bodies are failing to disseminate the outcomes of research, including information for the 'Public Good' (DTI, 1992, p. 16, 1996a, pp. 102-103, 1999a, pp. 91-92).

In R & T programmes, attention has focused on a range of organisations including SMEs, HEIs, and RTOs (the case studies contained in appendix E provide examples). In advisory programmes, the remit is more restricted, with emphasis placed on the SME. However in contrast to R & T schemes, work hinges around presenting the evidence of firms failing to adopt best practice across the broad front of business operations.

From his experience the author is able to confirm that instances of uncompetitiveness can be detected as a result of interrogating the information sources detailed in chapter 5, section 5.3. For example, from his involvement in developing the MPI programme, the author witnessed himself and colleagues being made aware of poor performance in SMEs through a research paper published by the Programme on Information and Communication Technologies (PICT) (Fleck, 1988), (see appendix H, section H.2.4.2, p. 130).

The presence of market failure is in itself, insufficient grounds for funding. The impact of failures on the 'Economy' must be sufficiently great to justify public expenditure. Guidance (DTI, 1996a, pp. 12, 35-37, 1999a, pp. 11, 32-33) advises that justification for funding is based in part on there being significant undesirable consequences arising from market imperfections. Examination of programme ROAMEs shows that officials do not attempt to describe the impact in absolute terms, for example, the financial cost to the 'Economy'. Instead the approach adopted is to indicate the consequences of problems through detailed descriptions of the market failures.

Finally, in identifying instances of organisations not adopting good practice, the author would suggest that it is essential for officials to first have an understanding of what approaches represent worthy practice. Again officials consult many of the information sources listed in chapter 5, section 5.3. For example, in developing the M90s programme, officials called on evidence generated by the Advisory Committee ACOST, which showed that it was good practice for firms to integrate their business functions (ROAME, 1988a, paragraph 2; ROAME, 1991a, paragraph 4).

Step 2: Identify the Factors Inhibiting Organisations from Adopting Good Practice

Having identified evidence of firms not adopting good practice or exhibiting poor business characteristics, the work involved in this stage is concerned with identifying the underlying reasons for firms not taking the best practice actions which they should. The reasons for adopting best practice stem from the need to improve competitiveness to compete in world markets, and will include those good practice actions which are needed to address poor operational characteristics. The reasons for non action constitute the conditions of market failure. The author makes the important observation at this point, that what is being investigated are the factors which are acting to inhibit SMEs and other bodies from taking desired actions. It would therefore be more accurate to refer to these factors as 'market inhibitors'. However to avoid confusion the author will stay with 'convention', and continue referring to them as 'market failures'.

As described in chapter 5, sub-section 5.2.4.1 it may be that for instance organisations perceive the risks as too high or they may lack the available finance, either of which can inhibit them from taking the appropriate action. Specific examples of the types of problems which have been identified can again be seen from the examination of programme ROAME statements. Among the market failures identified in the ROAME for the New SMART Scheme (ROAME, 1999, paragraphs 13 and 14) is that of the difficulty faced by innovative SMEs in raising finance for funding research and development leading to new products. In part the problem falls in the category of market failure Risk and Uncertainty' (see chapter 5, sub-section 5.2.4.1 (ii)), risk being identified as one factor inhibiting financial bodies from providing funds. That the return from R&D projects tends to be 'long term' exacerbates the situation.

Similarly the ROAME for the establishment of the former Innovation Credits scheme (ROAME 1994c, paragraph 22) points to imperfections in the market for information, which give rise to problems in appraising and allocating risk. The ROAME cites only 5% of SMEs making use of technology related services provided by organisations such as HEIs and RTOs. Reluctance to use these facilities was put down to SMEs being wary of external large organisations, and their unwillingness to commit what they see as 'risky' expenditure on anything which cannot guarantee success (see chapter 5, sub-section 5.2.4.1 (ii)).

Advisory schemes provide further examples of market problems. The Business Link ROAME, (ROAME, 1994a, paragraph 9) cites poor management as the principal cause of SMEs failing. The ROAME continues by suggesting difficulties could be addressed by providing better access to information and advice. Among the contributory problems listed for SMEs are the costs of collecting and analysing business information, a lack of time and financial resources to undertake training to raise skill levels, and evidence of SME managers being unsure as to where they should go for help and advice (paragraph 10). For the Regional Supply Offices (RSOs), the market imperfection identified is that of the acquisition and use of commercial information by both the demand and supply sides of the

market for goods and services (ROAME, 1994b, paragraphs 39 and 41). SME suppliers are identified as finding it costly to market their products, whilst existing commercial sources of information are described as not providing information which is sufficiently precise or detailed to allow purchasers to carry out credible assessments of potential new suppliers. The author observes that for both the Business Link and RSO cases, the market failure being addressed can be classified as an 'Information Failure', as described in chapter 5, sub-section 5.2.4.1 (iv).

Step 3: Developing the Delivery Strategy

This step is concerned with selecting the delivery mechanisms which are to be employed as part of a proposed strategy to alleviate market failures. Guidance (DTI, 1996a, p. 37, 1999a, pp. 33-34) refers to the need to illustrate how mechanisms will operate to negate failures. The author proposes that this involves two stages of thinking. First there is the requirement, as indicated in the guidelines, to show how delivery strategies will function to encourage organisations to adopt good practice methodologies, and thus address the identified problems. To help demonstrate the efficacy of proposals, officials will often provide examples of where an approach has been successfully adopted elsewhere. But in the author's view, there is a second stage in which officials gain an understanding of how the individual good practice methodologies which organisations are being encouraged to adopt themselves act to improve the economic performance of firms. Describing how good practice functions are expected to achieve improvement is also germane to demonstrating the credibility of proposed delivery strategies.

ROAMEs do not always document how the best practice mechanisms work to improve performance, but, in the author's opinion, officials must have a good understanding of the principles involved. It is likely that officials in putting their cases before an Individual Programmes Committee for approval (see section 6.4.2 below) will be closely examined on the principles underpinning the case, and the wise official will ensure he or she gets to know his/her subject well.

A variety of delivery mechanisms have and are being employed by DTI. Examples can be derived from the ROAMEs of the previously mentioned programmes. For instance, in the New SMART Scheme the 'funding gap' is addressed by providing a financial contribution towards the costs of undertaking the early stages of researching, designing, and developing an idea (ROAME, 1999, paragraph 15). The knowledge that DTI has undertaken appraisal of the technical and marketing aspects of projects, is cited as encouraging investment organisations to also provide funding. In the earlier SMART scheme, officials hoped that the evidence generated of the benefits of funding small, innovative companies, would encourage more finance houses to invest in R&D projects in this type of firm, although not successfully (see appendix K.3.2.2, p. 165). The author observes that this phenomenon is another example of the 'demonstrator effect', which was heavily exploited with success in the previous Consultancy Initiatives (see appendix F, section F.4, p. 99).

In the case of the Innovation Credits scheme, the failure of firms to seek outside help was addressed by encouraging firms to use sources of technical expertise such as HEIs and RTOs, by offering them a small grant, (not normally exceeding £250-00), to cover the costs of an initial consultation relating to a specific problem (ROAME, 1994c, paragraph 26, annex 2, paragraph 4). The offer of these innovation credits was also seen as helping to develop the demand side, thereby encouraging the service providers to develop their service provision to suit the needs of SMEs. This latter mechanism was also adopted in the MPI programme (ROAME, 1990a, paragraph 2.12), (see also appendix H, section H.3.2.2, p. 133).

In the Business Link initiative, the problem of SME managers not knowing who they should consult for help was put down to the fragmentation of agencies providing business support, that is, organisations including the Training and Enterprise Councils (TECs), Enterprise Agencies, Chambers of Commerce, and Local Authorities (LAs) (ROAME, 1994a, paragraph 11). The solution proposed was the provision of funds to encourage these organisations to come together and form local partnerships (Business Links) to provide a 'One Stop Shop' facility able to provide an integrated,

business support service (paragraphs 11 to 14). For the Regional Supply Offices programme, the need to help SME suppliers to be introduced to the new business opportunities being provided by purchasers, was addressed by funding the formation of regional brokerage services (the RSOs) to match suppliers to these opportunities (ROAME, 1994b, paragraphs 1 to 22).

Other examples can be seen through inspection of the case study examples contained in appendices (E) to (H). Appendix E, section E.2.3, p. 86, and appendix K section K.3.2.1, p. 162, show how in the General Industrial Collaborative Projects (GICP) programme, the resources of the Research and Technology Organisations (RTOs) were employed to promote collaborative R&D, by overcoming the market failures of risk, and suspicions relating to partners. Appendix E, section E.3.4, p. 89, reveals how grant funding was used to encourage small firms to undertake R&D, with the offer of grants seen as offsetting factors such as risk and a lack of finance. In the Consultancy Initiatives (CI), grants were used to negate the effect of firms being suspicious of employing consultants, thereby encouraging them to try using consultants for the first time. The success of the previous advisory schemes were cited in the ROAME statement as demonstrating the efficacy of the approach (see appendix F, section F.4, p. 98).

In the Managing into the '90s programme a variety of mechanisms were adopted, such as the use of mobile road shows, seminars, and the distribution of informative literature. They were employed as means to overcome firms' lack of awareness of the need to adopt best practice, and then encourage them to commit to projects for lasting change. The strategy was to first sensitise firms by explaining the business issues, and then provide them with increasing levels of aid to help secure their commitment (see appendix G, sections G.5.1, pp. 115-118, and G.8, pp. 119-126). In the ROAME, the earlier Towards Integration awareness programme was referenced as providing an example of the effectiveness the proposed strategy. Further examples of delivery mechanisms employed in programme implementation are discussed in appendix K as part of identifying good practice.

Step 4: Demonstrate the Value of Proposed Interventions.

There is little or no value in encouraging organisations to take action which results in insignificant or zero benefit. The author observes that officials work hard to ensure that what is proposed will have substantial positive economic impact. However examination of ROAME statements reveals the 'Rationale' sections to be generally silent in this area, the inference being that if market failure is negated, then the undesirable effects will consequently be reduced or removed, which in itself may be regarded as a real positive outcome. The author observes that, alternatively, demonstration of benefits is often conveyed in the 'Objectives' section of ROAMEs. Here targets are given which can indicate economic impact, which if met can be used as evidence of good value for money. The setting of objectives is described in greater detail in section 6.3.4 below, where examples are also given.

6.3.3 Inputs to the Process of Developing Programme Rationale

As discussed earlier, lack of competitiveness is often the result of failure to adopt best practice, and in developing the 'Rationale', officials seek to determine where best practice has not been adopted, the reasons for this, and the importance of so doing. In gaining a proper understanding of market failure and the nature of underlying problems, officials interrogate a number of information sources. The reference sources used are largely the same as those interrogated in forming initial ideas, but by way of helping the reader to gain a fuller understanding of the processes involved, some further examples of their use are now given.

6.3.3.1 Cabinet Office Advisory Committees

Chapter 5, section 5.3.3 briefly showed how the reports of Cabinet Office Advisory Committees provide useful data to inform the design process. The role of one such committee, ACOST, is discussed in appendix B. Their role is to investigate issues which cannot be addressed by a single department alone, that is, they look at the horizontal issues which transcend the responsibilities of the individual Whitehall departments and recommend action to

be taken by government to resolve problems. The Advisory Council for Applied Research and Development (ACARD) and the Advisory Council on Science and Technology (ACOST) were two committees which influenced the development of programmes considered in this thesis [Interview 5] (see the case study examples for M90s in appendix G and MPI in appendix H. With respect to ACARD see appendix G, sections G.2.2.1, p. 109. G.2.2.2, pp. 109-110, G.2.4.2, p. 112, and G.5.1, p. 116. For ACOST see appendix G, sections G.2.4.2, p. 112, and G.4.2, p. 115, and appendix H, sections H.2.4, p. 129, H.2.4.1, p. 130, H.2.4.2, p. 130, and H.4, p. 138).

Research involved investigation of the role of ACOST, which included an interview with Dr. John Leather, who sat on the Advanced Manufacturing Technology Sub-Committee of ACOST [Interview 6]. He was able to provide useful insights into the operation of ACOST. Dr. Leather highlighted how ACOST placed itself in a position to give credible advice, by the Council consulting a 'broad church' of well informed opinion across government, academia and industry. Consultation was affected by ACOST's membership being drawn from leading specialists in these sectors. Inspection of the ACARD report *New Opportunities in Manufacturing* (Cabinet Office 1983, inside of the front cover), suggests that the membership of the ACARD council was similarly structured.

Committees such as ACOST fulfil an important role in informing policy. Those responsible for policy development within government tend to be 'generalists' without specialist knowledge (Dunleavy, 1995, p. 62), and must therefore seek external advice on those aspects of policy involving technical issues. Saward (1990, pp. 588-591) refers to the process of expertise-based co-option, whereby governments 'tap into' specialists' knowledge by co-opting them into the policy making process. ACOST is one such example. Saward refers to specialists lending credibility to resultant policy decisions, by their being widely recognised as experts in their fields. Inspection of ACOST's membership revealed the individuals coopted to be people of high public standing, and regarded as authorities in their areas of specialism (ACOST, 1989).

During the consultation process ACOST built a wealth of evidence concerning market failures, and of ideas for resolving the issues identified. Information relating to problems and strategies for their resolution are contained in the final reports, which officials can draw on in developing credible evidence of market failure, and designing defensible delivery strategies. Dr. Leather was also able to point to further mechanisms by which the work of ACOST informed officials. Representatives of the Whitehall departments sat on the sub-committees and became aware of the nature of problems through their direct involvement in discussions. Secondly in the consultation process, draft reports and discussion papers were circulated to government departments for comment, also providing officials with early information relating to the issues to be resolved (see also Interview 5, and appendix C, section C.4, pp. 73-74). The mechanism helped inform the development of the MPI programme (appendix H, section H.2.4).

Inspection of ROAME statements shows widespread use of reports published by the Advisory Councils. For example the ACARD report *New Opportunities in Manufacturing* (ACARD, 1983) informed the development of Phase 1 of M90s [Interview 5]. The Phase 2 M90s ROAME statement (ROAME, 1991a, paragraph 4) references the ACOST report on *Advanced Manufacturing Technology* (ACOST, 1991) as indicating the need for inter-disciplinary work in planning manufacturing processes rather than the adoption of discrete technologies. The ROAME also cites the ACOST report *The Enterprise Challenge: Overcoming the Barriers To Growth To Small Firms* (ACOST, 1990) as providing evidence that the lack of long-term management strategies within firms was often a major barrier to growth.

The Support for Products Under Research (SPUR) ROAME statement (ROAME, 1990b, paragraph 14) refers to the 'Barriers To Growth' report, in providing evidence of the immediacy of market pressures which bear on firms, as indicating the need for single company funding. The Business Link ROAME (ROAME, 1994a, paragraph 10) again refers to the report in relation to

demonstration of SMEs needing to improve their management skills. Interestingly ACOST reported to the Prime Minister, who attended some of its meetings [Interviews 5 and 6], (appendix C, section C.2, p. 72). The Prime Minister sometimes requested items for placement on ACOST's agenda, and an example is of Mrs. Thatcher requesting environmental issues be investigated. An instance of Mrs. Thatcher influencing ACOST's recommendations is of her 'hitting with her handbag', the idea of establishing a 'manufacturing centre of expertise' [Interview 5]. ACOST also provided a forum for senior ministers to meet. The chairman of ACOST hosted dinners for the Secretaries of State, where views on the key issues were exchanged [Interview 6].

6.3.3.2 Dialogue with External Bodies

Examples of how knowledge and skills held in external bodies have been employed in programme design and operation, were given in chapter 5, section 5.3.4, and in sub-section 6.2.3.4 above. The author has found from experience that questioning the specialists and practitioners of good practice in organisations such as HEIs, Consultancies, RTOs, Development Agencies and firms, is usually fruitful in collecting evidence of market failure. Colleagues support this view [Interviews 9 and 11]. Through their project work they develop knowledge of the best practice methods which firms should be adopting, and their direct contact with firms makes them aware of which best practice actions are not being adopted. For example, in discussing the CADEC project with Munday (see sub-section 6.2.3.4), he observed that the University of Leeds became aware of project needs through their earlier research into firms' future requirements for integrating computer based manufacturing systems. In the RTO example, SATRA had consulted its membership in coming forward with ideas for plastic lastes. Munday was also able to cite, as was the author, instances of firms coming forward with ideas for new schemes.

Munday subsequently confirmed that in the examples he quoted, liaison with the parties coming forward continued after the initial meeting. They provided him with evidence of market failure and how problems should be addressed, helping him to draft the cases for support. Munday's experience

echoes that of the author's. The author would meet on several occasions with the lead organisation to obtain the information in building a robust case. The ROAME for the New SMART Scheme (ROAME, 1999), provides a further example of how external bodies can be valuable sources of evidence in building programme rationale. The ROAME refers to work at Warwick University suggesting that 50% of SMEs are more concerned with maintaining business stability rather than growth (paragraph 21). This observation was made among others to justify the introduction of technology reviews, and studies to help motivate firms to grow through implementing innovative ideas.

In developing the Manufacturing, Planning, and Implementation (MPI) programme, a number of external agencies were contacted to secure evidence of market failure, and how problems might be resolved. Appendix H details the design and operation of the MPI programme. A meeting was held with the Scottish Development Agency (SDA) who confirmed through their experience of dealing with Scottish SMEs, a lack of skills in firms to implement Advanced Manufacturing Technology (AMT) strategically. A further problem identified was that large companies who train a large proportion of young graduates, operate in a compartmentalised manner, and when these people leave and join an SME, they take this culture with them. Interviews held with several of the large consultancy organisations, also confirmed the presence of a lack of the necessary skills in firms, (see appendix H, section H.2.4.4, p. 131).

The author also met with Professor Warnecker of the University of Stuttgart, (see appendix H, sections H.2.4, p. 130, and H.2.4.6, p. 132), who provided evidence of the benefits accruing to firms through good systems integration. In designing MPI, consultants were interviewed concerning the problems associated with the strategic planning of AMT by SMEs. They informed DTI that the complexity of strategic AMT projects would require the assignment of senior consultancy staff. From their early experience of working on strategic projects, they suggested that the department cater for consultancy costs of around £100,000 for each project to be funded (see sections H.2.4.5, p. 132, and H.3.1, pp. 132-133).

6.3.3.3 Commissioned Research

DTI has successfully commissioned HEIs, consultancies, and RTOs to research the problems in cases where insufficient evidence was available. The topic was initially discussed in chapter 5, section 5.3.9, where it was mentioned how officials had given a contract to consultants ISTEL, to help build evidence of market failure. In an interview with Mr. Richard Arnott [Interview 11], he explains how when developing the ROAME for the Computer Aided Engineering and Small Scale Computer Integrated Manufacturing programmes, officials commissioned research into market failures. Officials knew from the experience gained in operating previous schemes that SMEs were not investing sufficiently in the technologies which would allow them to compete. To help confirm the exact nature of this market failure, officials contracted a firm of specialist consultants, that is ISTEL, to research problems. ISTEL found that the investment costs and the task of integrating the new technologies were too great for SMEs, and recommended that a programme of 'user driven' projects to develop application software be supported. ISTEL's recommendations were then verified by presenting draft plans, based on the consultant's proposals, to an open meeting attended by a mix of HEIs, CAD vendors, and user companies. The author observes that the convening of the meeting represents a further example of officials consulting with external organisations in the ROAME development process.

In developing the rationale for MPI, officials wanted to demonstrate the benefits of firms adopting an holistic approach in the planning their use of AMT. PERA were commissioned by the author to investigate a number of consultancy projects which they had undertaken on behalf of clients, to compare the performance of firms which had adopted a strategic approach in planning AMT, in contrast to those that had not. The study provided convincing evidence of the efficacy of the former approach, with the sample of firms exhibiting substantial increases in performance over the latter, (see appendix H, section H.2.4.2, p. 130).

In another instance consultants were asked by DTI's former Competitiveness Division (CD) to establish the requirement for the Regional Supply Office (RSO) programme. The project investigated the likely nature of demand for a proposed network of RSOs by studying the needs of national purchasing organisations. The consultancy report (Pin-Point, 1994) found 72% of buyers feeling the RSO concept to be good or very good, and it provided an analysis of market requirements to help officials in designing the programme. A further example was the award of a contract to the University of Brighton to investigate how firms learn about best practice within supply chains (supply chain learning), what drives the learning process, and what the barriers to learning are. The research was commissioned by DTI to help the department identify what future activities should be introduced to promote supply chain learning.

6.3.3.4 Personal Experience

As discussed in section 6.2.3.6 above, officials will also call on their personal knowledge in developing programme rationale. From his own experience and in talking to others, the author found that experienced officials will be aware of market failures, and will also have knowledge of what delivery mechanisms have been successful or otherwise in negating problems in the past.

6.3.3.5 White Papers

Chapter 5, sections 5.2.3 and 5.3.10 discussed the need for officials to consult relevant white papers to ensure that new interventions are conformant with policy. Chapter 5, section 5.2.3, recorded how the author asked Dr. Kenneth Poulter, a Grade 5 in DTI, for his view of the role of white papers in relation to programme design. He viewed white papers as ministers' 'wish lists' setting out their political aspirations, which officials then work to realise through the introduction and development of schemes. White papers thus state official policy, and list activities and objectives to be undertaken by the Whitehall departments. For example, in embarking on the development of the Small Business Service (SBS), senior officials in DTI were responding to the stated intention in the Labour Party's first

Competitiveness White Paper Cabinet Office (1999, p. 18), to establish such an agency. In the white paper *Competitiveness: Helping Business To Win* (HMSO, 1994a), the previous Conservative Government announced its intention to introduce the network of centres of expertise SUPERNET (p. 79). The DTI White Paper (HMSO, 1988, pp. 24-25) announced the introduction of the Consultancy Initiatives (CI), and stated the government's aim to initially support 1,000 projects every month, (see appendix F, section F.5, p. 99).

A feature of recent white papers has been the reporting of progress towards meeting previously stated objectives. In the forward of the paper *Forging Ahead* (HMSO, 1995a, p. 3), the then Prime Minister John Major refers to the earlier white paper *Competitiveness: Helping Business To Win*, as the first comprehensive national survey of Britain's competitive position, as measured against our trading rivals. The Prime Minister continues by reminding the reader of the government's promise to "*update this national survey each year, as a hard-headed assessment of our competitive position*" (p. 3). The white paper then goes on to report progress. For instance, the paper shows that total and manufacturing output had both risen by 4% during the year, unemployment had fallen by 300,000, and manufacturing productivity was up by 4% (p. 9). The establishment of SUPERNET is recorded, and forty-five centres had become members of the network (p. 144).

In talking to colleagues, the author is aware that in drafting white papers, officials will consult external as well as internal sources of information. Information relating to market problems will be drawn from agencies which are in touch with the market. For example in *Competitiveness: Helping Business To Win* (HMSO, 1994a), the paper acknowledges reference to the 1994 OECD's Jobs Study, which had identified the problem of inflexible labour markets in Europe as a principal cause of unemployment. The white paper *Our Competitive Future: Building the Knowledge Driven Economy* (The Stationery Office, 1998, p. 34), refers to an international benchmarking study undertaken in 1998 by Spectrum Strategic Consultants. The study had revealed the problem that while the UK was on a par with the United States (US) and Japan in business ownership of personal computers, with modems, only 12% of

UK SMEs exploited networking technology effectively compared with almost 20% in the US. Inspection of the CI ROAME statement (ROAME 1988b) suggests that officials also call on previous experience of running programmes. In paragraph 2.1 the ROAME states:

"*During the preparation of the White Paper "DTI - the department for Enterprise", the rationale was based on several points: ... These propositions were derived from the results of the evaluation programme carried out on the pre-existing advisory schemes*".

Hill (1997, p. 141) proposes that study of the sequence of events in the development of policy would suggest the process to typically comprise:

- political manifestos,
- proposals described in the 'Queen's speech' at the beginning of a parliamentary session,
- publishing of green and white papers setting out policy objectives in general terms,
- parliamentary debates,
- Acts which give policy its legal shape.

The introduction of an Act, Hill continues, would be followed by activities such as the introduction of regulations, instructions to officials, together with notes, reports and accounts of working practice. For the purposes of the analysis undertaken in this thesis, the author suggests that these latter activities are represented by the process of designing and implementing support programmes, (see chapter 3, section 3.3).

The author would make two observations concerning the above sequence. Firstly, as can be seen from the examples of targets quoted above, white papers can contain specific as well as general objectives. Secondly, the sequence as laid out by Hill was not followed in the cases examined by the author. Chapter 5, section 5.2.2 described the role of parliamentary Acts as providing the legal authority which enables ministers and their departments, to finance programmes out of the public purse. It was shown that the two Acts under which the

programmes studied in this thesis were funded are the Industrial Development Act 1982 (IDA) (HMSO, 1982), and the Science and Technology (S&T) Act 1965, (HMSO, 1965). Both of these Acts pre-date the white papers announcing the government's policy to introduce these schemes, that is, the drafting of white papers followed the introductions of the relevant Acts.

The importance of first having legislation in place is indicated by the observations of others. In an interview with the author [Interview 2], Mr. John Cammell, a Grade 3 in DTI, proposed that the Science and Technology Act was 'indecisive', hence allowing officials to always find something in its content that would allow the department, (and in turn ministers the author would argue), 'to do what it wanted to do'. This flexibility, the author proposes, is important in providing the government with a wide scope for what they commit to in introducing new interventions. Inspection of white papers displays a variety of schemes that have been announced and supported under the Science and Technology Act. The DTI White Paper (HMSO, 1988p. 37) announced the expansion of the SMART scheme. Chapter 5, section 5.2.2 showed that the scheme is funded under the Act. The white paper also signalled the government's policy to fund collaborative research between HEIs, companies and research associations, under schemes such as LINK, EUREKA, and GICP, and promote technology transfer through initiatives such as the Regional Technology Centres (RTCs) and the Teaching Company Scheme (TCS), (pp. 35-36). *Competitiveness: Helping Business To Win* (HMSO, 1994a, p. 79), announced the introduction SUPERNET. Consultation with colleagues confirmed that these schemes too were funded under the 'Science and Technology Act'.

These examples serve to illustrate the breadth of activities which have been provided for under the 'Science and Technology Act'. Support for this observation, and further confirmation that such activities are provided for under the Act, is provided in the DTI *Finance Handbook* (annex 5.1.A). The handbook lists research and development in any of the sciences – including the

social sciences and technology – and the dissemination of the results of research such as to further their practical application, as provided for under the Act.

The DTI White Paper (HMSO, 1988, pp. 24-25) announced the introduction of the Consultancy Initiatives (CI), and stated the government's aim to initially support 1,000 projects every month, (see appendix F, section F.5, p. 99). Chapter 5, section 5.2.2 suggested that the operation of CI was possible because of provisions made under the Industry Development Act (HMSO, 1982, p. c52), (see also Interview 14). It was also proposed that the Business Link and Regional Supply Office initiatives were similarly provided for under the Industry Act. Thus, the author argues, these schemes also could be announced in white papers, since the necessary legislation was already in place. Intention to introduce the Business Links and the Regional Supply Offices was stated in *Competitiveness: Helping Business To Win* (HMSO, 1994a). On page 67, the white paper refers to government having invited the training and Enterprise Councils (TECs) to bring together local business support agencies in England, to establish a network of 'one-stop shops' for business information and development services, which were to be called Business Links. On page 68 the paper states "*The government will establish a regional network* [of Regional Supply Offices] *which will promote best practice in supply chain partnerships to include buyers and suppliers in both the private and public sectors*".

6.3.4 Setting Objectives

The supplementary guidance *Guidance on Preparation of Evaluation Plans* (DTI, 1999c), suggests that objectives can usefully be classified in the three levels of ultimate, intermediate, and immediate objectives (annex A, pp. 7-8). The ultimate objectives are usually expressed as the broad benefits sought by government, such as the economic benefits, e.g. to enhance the sustainable level of real, national income over time (p. 9), international security, and health, safety and welfare.

The DTI *Innovation Budget Guidelines* develop the discussion on objectives, stating: "*A programme of work should be assembled to achieve specific goals designed to overcome a 'market failure'*" (DTI 1999, pp. 36-39). Guidance then informs that the overall objective(s) is (are) described in the Introduction and Rationale sections of the ROAME statement, and explain how a programme's outcomes will contribute to DTI's objectives and targets. In the "Objectives" sections of the ROAME statements, officials are required to describe the intermediate objectives, and the specific (immediate) objectives. The intermediate objectives describe how the overall objectives will be met, and the specific objectives state the success criteria for a programme's activities. Each level of objective must be supportive of the level above. The aim of setting objectives, is to help facilitate subsequent assessment of a programme's performance in reducing the identified market failures. Officials attempt to define the overall objectives as tightly as possible by using precise wording that is not open to multiple interpretation.

The author, from his involvement in designing programmes, observed the reference to the 'Red Jelly Test' in one undated version of the *Innovation Budget Guidelines* (Keliher, 1997). Application of the 'Red Jelly Test' was recommended to 'test' the objectivity of wording. Wording it was argued should not be so general that the objectives could be applied with equally good effect to a programme for the research and development of red jelly! Officials were recommended to submit their objectives to the 'Red Jelly Test', and they always aim, where practical, to define their objectives in absolute terms.

As introduced above, the "Objectives" section of ROAMEs is concerned with the 'lower level' targets, that is the intermediate and specific objectives. They will comprise targets such as the expected outcome of research work, or the number of seminars to be held in an 'events' programme. These targets must, however, be consistent with the overall programme goals, and be testable, specific and verifiable, and whenever possible be assigned a numerical value (HMT, 1997, pp. 5-6; DTI, 1992, pp. 19-21, 1996a, pp. 39-41, 1996b, chapter 9, annex 9.1.B, 1999a, pp. 36-39). Targets also include 'milestones' for the completion of specified work, or the time by which a number of events are to

occur. Additionally a baseline is also set against which a target can be compared, to show a programme's intended performance level in terms of the amount by which market failure will be reduced.

The combination of setting targets and baselines assists 'Monitoring', such that problems can be readily identified and corrective action taken quickly. Targets with baselines also help in assessing performance during programme evaluation. Setting objectives, particularly quantifiable ones, can serve to promote good results by providing officials with a target to aim for while running schemes. Successful delivery of a programme obviously depends on the participation of the target organisations. Officials must show that despite the perceived market failures, there is likely to be sufficient support from potential participants to realise a scheme's objectives.

Examination of programme ROAMEs provides specific examples of programme objectives which have been set. The ROAME for the new SMART scheme (ROAME, 1999) identifies the ultimate objectives as to:

a) " *improve the future competitiveness of the UK economy by supporting innovative SMEs, which are a dynamic source of new wealth, employment, exports and innovation and by encouraging more SMEs to become innovative; and*

b) *help contribute to a climate which encourages investment in innovative technology by individuals, firms and financial institutions and which stimulates a market in technological advice*",

(ROAME, 1999, paragraph 30).

Annex (H) of the ROAME details the intermediate objectives, and lists the specific aims set for the programme. For instance, to provide support for R&D projects, Technology Reviews and Studies, was described as an intermediate objective. Specific objectives included an average sales to grant target of at least 10:1, 80% of SMART competition winners to be trading three years after the final grant

payment is made, and generating at least twenty new case studies each year illustrating the benefits of innovation.

The draft ROAME for the third phase of the joint DTI/DETR Environmental Technology Best Practice Programme (DTI/DETR, 1999), describes the ultimate and overall objectives as to stimulate an effective response from firms to environmental developments, by increasing the awareness of environmental issues and best practice, as a means to improving industrial competitiveness (paragraphs 2.2 and 2.9). The intermediate objectives described included encouragement of a market for environmental technology goods and services, and to identify through surveys in the priority areas for programme work, whether the specified reductions in emissions, and/or costs of waste treatment or disposal, had been achieved within two years of taking action. Specific objectives describe activities such as to develop a strategy for providing advice and information to business within six months of approval, and to provide free consultancy advice for SMEs on how to reduce waste and costs. The target for annual cost savings accruing as a result of programme activities, was quoted as £320,000,000 by 2015. However it was pointed out that the contractor responsible for operating the programme had 'internal' targets, which are revised at the beginning of each financial year in the light of the previous year's performance (paragraph 2.3).

The MPI programme provides an example of how objectives can be set for schemes. A target of funding 175 projects was set in the programme (ROAME, 1990a, paragraph 3.1). Appendix H, section H.3.3.1, pp. 135-136, describes how the figure of 175 projects was arrived at. It was estimated that there were about 3,500 SMEs in the market who were eligible for funding under MPI, and that officials could expect the scheme to attract 5% of these firms, that is 175 companies. The funding available to officials for the payment of grants also constrained the number of projects that could be supported. The money available to fund grants was approximately £8,000,000, and it was estimated that each consultancy would require a grant of £50, 000, assuming project costs of £100,000, funded at a level of 50%. The funds available and the cost of each grant dictated a figure of 175 projects to be funded.

Further examples of objectives set in programmes are given in the programme case studies (SMART, appendix E, section E.3.3, p. 89, SPUR, appendix E, section E.4.2, pp. 92-93, CI, appendix F, section F.5, pp. 99-100, M90s, appendix G, section G.3, pp. 113-114).

6.3.5 'Appraisal', 'Monitoring', and 'Evaluation and Feedback'

The *Innovation Budget Guidelines* require officials to set out their plans for project 'Appraisal', 'Monitoring', and 'Evaluation including Feedback' under their respective headings in ROAME statements. However the author observes from his own experience and through the examination of ROAME statements, that in each of these areas, only outline plans are often given. Detailed planning tends to take place during the implementation phases of programmes. Discussion of strategies which have been adopted for 'Appraisal', 'Monitoring' and 'Evaluation' is therefore left to subsequent chapters. Chapter 7, sections 7.2 and 7.3 cover 'Appraisal' and 'Monitoring' respectively, and chapter 8, section 8.3, discusses evaluation planning and implementation. Section 8.4 provides some examples of strategies that have been adopted.

6.3.5.1 'Appraisal'

Appraisal in programmes usually refers to the task of ensuring that projects are selected such that they are coherent with programme objectives, and/or how contractors are going to be selected (DTI, 1999a, p. 39). Under 'Appraisal' officials are asked to:

"(i) *explain the criteria to be used in appraising projects or bids under the programme*

(ii) show how the criteria relate to programme objectives

(iii) identify the person(s) responsible for doing the appraisal",

DTI (1999a, p. 39).

Inspection of ROAME statements provides some examples of appraisal strategies which have been adopted in the past. In the MPI programme, a scheme contractor was appointed by competitive tender (see appendix H, section H.5.1, p. 138), who was responsible for appraising project applications against the scheme's eligibility criteria (ROAME, 1990a, paragraphs 4.1 to 4.3). The ROAME describes the rationale for using an external contractor as to avoid placing additional burdens on the restricted resources of headquarters and regional staff. In the Consultancy Initiatives, project applications were first appraised by the Enterprise Units in DTI's regional offices, prior to a business review of the applicants by an Enterprise Counsellor (ROAME, 1988b, paragraph 5.2), (see also appendix F, section F.8, p. 101). In SMART, the appraisal of applications is undertaken by regional staff, who vet proposals against criteria such as the quality and novelty of proposals, the need for support, the qualifications and experience of the project leaders and their teams, and the commercial viability of the applicant firms (ROAME, 1991b, paragraph 10), (see appendix E, section E.3.5, p. 90).

6.3.5.2 'Monitoring'

Similarly to 'Appraisal', the study of programme ROAMEs reveals that officials limit work to the development of outline plans for 'Monitoring'. In MPI, the ROAME refers to the scheme contractor being responsible for the monitoring of the projects funded, with work including the six monthly reporting on the on-going performance of the programme (ROAME, 1990a, paragraph 5.1), (see also appendix H, section H.5.1, p. 138). The SMART ROAME (ROAME, 1991b, paragraph 14), stipulates that the participant firms in SMART being small, often new, and vulnerable, means that they are likely to require help and advice from the project monitoring officers. Consequently monitoring officers are required to visit stage I winners shortly after a project starting, and just before it ends. The last visit is undertaken to ensure that project work has been conducted satisfactorily before the final claim is submitted for payment. In CI, the performance monitoring of the consultants working on each of the component initiatives was conducted by the scheme contractor (ROAME, 1988b, paragraph 5.2), (see appendix F, sections F.6, pp. 100-101, and F.8, pp. 102-103).

6.3.5.3 'Evaluation and Feedback'

Inspection of programme ROAMEs show that in particular, officials provide only outline strategies for evaluating programmes when drafting ROAME statements. Detailed planning of evaluation is normally undertaken after ROAME approval. For example, the SMART ROAME limits itself to saying that an evaluation plan will be drawn up with the Evaluation and Policy Improvement Committee (EPIC), within three months of the ROAME being approved (ROAME, 1991b, paragraph 16). The MPI ROAME (ROAME, 1990a, paragraph 7.1) is similarly short on detail. It states that an evaluation plan will be submitted to EPIC within three months of programme approval, but indicates that interim evaluations will be undertaken at six months and one year after launch. A final evaluation to be carried out at the end of year three, by an external, independent body, was also proposed.

That the practice of delaying the detailed planning of evaluating programmes is conformant with guidance, is indicated in the 1992 innovation guidelines. These state that in ROAMEs officials should confirm that they are able to submit evaluation plans within three months of programme approval, and that guidance is available from the EPIC Secretariat (DTI, 1992, p. 22). The 1999 *Innovation Budget Guidelines* (DTI, 1999a, p. 42), state that officials should also indicate how the lessons learned from the results of 'Evaluation' will be fed back into DTI's policy development process. In the ROAMEs inspected, the author could not locate an example of plans for the feedback of evaluation results. However, examples of how lessons learned from evaluations have been used to inform future programme policy, are given in chapter 8, section 8.4.

6.3.6 Inputs to 'Appraisal', 'Monitoring', and 'Evaluation and Feedback'

In developing strategies, officials refer to DTI's *Innovation Budget Guidelines* (1996a, 42-43, 1999a, pp. 41-42), and the department's subsidiary guidance notes on 'Monitoring' (DTI, 1999b) and 'Evaluation' (DTI, 1999c), which provide specific help in developing 'Monitoring' and 'Evaluation' strategies [Interview 11]. The guidelines also advise officials to talk through

plans for 'Monitoring' and 'Evaluation' with DTI's Assessment Unit. The unit's advice represents an 'input' to the process.

6.3.7 Outputs

The 'output from 'Issue Identification' is draft ROAME statements for submission to the relevant IPC for approval.

6.4 ROAME Approval

In the author's experience, derived from being directly involved in the process of approving programmes, both from submitting his own proposals for endorsement as well as appraising those of colleagues, the approval process often instigates change to initial drafts of ROAME statements. For this reason the approval process was regarded as an integral part of the design process for the purposes of analysis. Examples of how the Individual Programme Committees (IPCs) make recommendations for changes to ROAME statements, are provided in section 6.4.2 below.

The *Innovation Budget Guidelines*' (DTI, 1992, pp. 33-42, 1996a, pp. 48-53, 1999a, pp. 43-48) usefully map out the approval process. Inspection reveals the process to be essentially sequential, comprising several stages organised in ascending levels of budgetary authority, that is, the number of stages through which a proposal must pass for authorisation to be given is dependent on the amount of funding requested. Inspection of successive versions of DTI's guidance shows that the financial thresholds change with time. The author has experienced that these changes can be introduced 'at short notice', often at the request of ministers.

Inspection of DTI guidelines (DTI, 1992, 1996a, 1999a) shows the stages of the approval process to be:

- Advisory Committee Approval
- IPC Approval
- Ministerial Approval
- Treasury Notification
- EC Approval

From inspection of internal papers, and his own experience, the author notes that the approval process involves the progressive validating of proposals, with the arguments supporting a case being closely examined at each stage. The proposal must be endorsed at each point before forwarding to the next.

6.4.1 Advisory Committee Approval

The advisory committees are observed to wield influence. Officials are advised to submit ROAMEs first to the relevant advisory committee prior to seeking IPC approval (DTI, 1996a, p. 50). The 1999 version of the guidelines similarly advises that the directorate responsible for raising a proposal, first submits their ROAMEs to the "*relevant Advisory Committee, where such exists*" (DTI, 1999a, p. 45). For the author the phrase "*where such exists*" serves as a poignant reminder of the demise of the previous AMTC (Advanced Manufacturing Technology Committee), which was one of the principal committees involved with technology related programmes. At the time of AMTC (around 1990), this type of committee was referred to as a 'Requirements Committee'. The author participated in several of the meetings of AMTC, and was able to observe first hand its important role.

In the author's view the AMTC had significant impact on programme development, its membership represented a wide cross-section of sector interests, typically involving senior well

qualified Chief Executive Officers (CEOs) drawn from academia, industry and the consultancy sectors. The Committee also benefited from being jointly chaired by the former Science and Engineering Research Council (SERC), which allowed work funded by SERC to be co-ordinated with the technology related work of DTI. Organisations seeking funding were invited before AMTC to put their cases for why proposals should receive government support. From their respective positions in the organisations which they represented, committee members were able to use their knowledge of the business and research issues to examine in depth, the credibility of each case put before them. Similarly officials presented draft ROAMEs to AMTC, and were subjected to the same level of 'in-depth' probing of the merit of their case. AMTC thus provided DTI with a broad church of informed opinion about the relevance of planned programmes and the suitability of government policies to address market needs. By debating each case put before them they helped tune policy, aiding officials in building robust cases for support.

Endorsement from a Requirements Committee lends officials psychological support for their proposals in discussions with senior officials and ministers. They help officials argue their case from a position of strength, as they can cite the combined support of a group of senior professionals for their proposals. The author notes that requirements committees provide another of example of co-option, as discussed in sub-section 6.3.3.1 above. Although not an advisory committee, the Business Link Implementation Strategy Group (ISG) similarly employed external expertise to help inform the on-going development of the Business Link initiative.

6.4.2 Individual Programmes Committee Approval

Guidance, (DTI, 1999a, p. 43) describes the role of the Innovation, Individual Programmes Committee (IIPC) as supporting the Departmental Management Group (DMG) in its overall supervision of programme expenditure (DTI, 1996b, section 3.1). The specific remit of the

Innovation Budget IPC is defined as reviewing the cost-effectiveness of programmes for which it is responsible by examining ROAME statements, looking particularly at:

- "*The validity of Rationale,*
- *Whether there is a market failure,*
- *Whether the proposed programme will resolve the problem,*
- *Whether it is the best way to do it,*
- *Whether the individual Objectives are appropriate, testable, and realistic,*
- *Whether the appraisal proposed for selecting projects will lead to the individual and overall objectives being met,*
- *Whether there is sufficient additionality, value for money and leverage on funding from elsewhere,*
- *Whether the proposal is sufficiently strong to be given funding ahead of other proposals*",

(DTI, 1999a, p. 43).

From his experience the author is able to confirm that other IPCs have similar remits. This observation is supported by inspection of the DTI *Finance Handbook*, which states that the IPC will be chaired by the relevant budget holder. The handbook lists the IPCs operating in the department (four in total), and collectively describes their role as to advise the budget holder on ROAME statements for programmes and projects, the response to evaluation recommendations, and the setting of budget priorities DTI, 1996b, annex 3.4.A, appendices 1 and 2).

How IPCs function in assessing ROAMEs is not detailed in the guidance. However the author has participated in numerous IPC meetings, both for the Innovation Budget and also the SME Budget which covers the funding of advisory activities such as the Business Link initiative. Experience of attending IPC meetings together with inspection of the minutes of these meetings, shows them to comprise of officials at PR10 (formerly Grade 7) and above, and to be chaired by the relevant Budget Holder (DTI, 1996b, section 3.4). The membership of IPCs is

drawn from a cross section of departmental directorates, those people having an interest in programme proposals and the specialist expertise (for example, economists) to provide credible opinions.

In many respects, an IPC meeting is similar to a PhD viva. Officials presenting ROAME statements are first invited to give presentations setting out their case, following which the chairman invites members to respond with their comments. Here presenters are challenged over their arguments and assumptions supporting the case for support. Using their knowledge and experience, members make judgements on the financial and technical viability of proposals. It is not unusual for ROAMEs which have been poorly constructed to be 'shredded' by members of a committee and have to be substantially re-written [Interview 12]. This is usually because the rationale has been poorly researched, or the case not argued clearly and concisely.

From participating in IPCs the author observes that members can however be very supportive of cases placed before them where the case is well researched, clearly and concisely put, and where proposals are regarded by members to be of high merit. It is worth noting that officials presenting proposals are asked to submit their ROAMEs to the IPC Secretariat to circulate to members no later than 10 days before the committee is due to meet (DTI, 1999a, p. 101). This provides ample time for people to digest ROAME contents and form opinions on the merit of each case. Officials ignore this fact at their peril. The author has witnessed a number of instances of where a ROAME has been circulated late, or even worse 'at the meeting'. On these occasions the officials concerned receive a very 'rough ride', with members refusing to engage in detailed debate, requiring the case to be re-submitted at a later date.

There is also the issue of limited funds, which raises the issue of priorities. Whilst developing the ROAME statement for the third phase of the Regional Supply Office programme, the author consulted

the requirements for approval with the relevant PR10 in DTI's Financial Resource Management (FRM) Directorate. The author was advised of the need to demonstrate why programmes, in this case the RSO programme, should receive priority over other potential candidates for funding, that is, why should money be spent on one programme rather than something else.

Inspection of the minutes of IPC meetings reveals the detail of the manner in which these committees operate, and the exchanges between members and those officials presenting their cases. The 29 April 1994 minutes of the Innovation and Technology Support IPC records the discussion of the ROAME for the SUPERNET programme. First the branch head responsible for the scheme gave a brief outline of how the proposed scheme would form part of a package to improve the delivery of support for innovation and technology, through the Business Links. The minutes then record the subsequent questioning of the branch head's team by the committee members, and the advice that they provided. Members advised the team that they must ensure that proposals are acceptable to the Business Support Organisations. The Grade 6 in the team responded by saying that the principle of the network was to be built on goodwill, so that all participants could benefit.

Some ambiguity was perceived by a member between DTI's role as a catalyst in establishing the SUPERNET services, and the possible longer-term provision of resources. The response was that whilst it could not be guaranteed, the intention was for the network to become 'self supporting'. The ROAME objectives were criticised for being insufficiently tight. The paper mentioned the drafting of reports, but failed to mention the level of services which were to be expected. The chairman followed by reiterating the importance of monitoring, and the setting of review points. The branch head replied that standards would be more accurately defined once some experience had been gained of network operation. Finally, the chairman summarised the IPC's view of the ROAME as "*very favourable*", and reports the minutes, gave his approval for £350,000 to be spent in support of the first year's operation of SUPERNET.

The minutes of 22 April 1999 meeting of the Innovation IPC provides further examples. The official responsible for the Biotechnology Exploitation Platforms (BEP) introduced the ROAME, and summarised the case for launching the full programme. The pilot programme had shown that many HEIs did not have the skills, or resources, to take advantage of the market opportunities arising from their research. In terms of exploiting research results, the bioscience sector was viewed as more complex than in the other sciences, and there was a danger of the UK having its lead eroded. The ROAME was criticised for not making a satisfactory case for the scheme, particularly in the area of additionality. The paper, it was advised, needed to say at an early stage what the proposed programme set out to achieve, and why things wouldn't happen without DTI's support. How income would flow from commercialised intellectual property (IP) was required to be described. Here the programme was described as unusual, in that it sought to help organisations exploit IP, but the committee observed that a similar programme operated in the defence sector had failed.

A number of other points, were raised by the committee members. These included the issue of the level of IP protection which might limit further research, and concerns over affordability. The sum sought was large, and would require consequential reductions in other areas of spend within the Innovation Budget. In responding, officials presenting the case emphasised that ministers were keen on the programme, and that the success of the pilot phase justified further support. Officials were advised that they should set out in greater detail the relationships of the BEP programme with the other schemes run by the department. The chairman added his concerns over the 'badging' of the scheme, as ministers were anxious to reduce the number of initiatives to avoid confusing business. A need to include in the ROAME the evidence from the pilot phase which would demonstrate that additional funding would result in a commensurate increase in benefits, was also recommended. It was noted that the programme rationale required strengthening. Summing up, the chairman was recorded as advising those present that the IPC supported the proposal, but that officials needed to consider the case against the broader picture of the biosciences industry, branding, and the implications for the funding of the

LINK programme. Officials were therefore requested to revise their ROAME in the light of the points raised, and resubmit the paper for a further short discussion by the IPC.

A final example is provided by the minutes of the 30 June 1997 meeting of the Small and Medium Enterprise IPC. A ROAME was submitted to the IPC by the then Management Best Practice directorate of DTI, which proposed the funding of a two year programme to identify best management practice. Proposals centred round the directorate working with regional Business Support Organisations, user firms, and other national bodies, to identify, develop, and evaluate national and international developments in best management practice. Discussion in the IPC suggested that the work would help set and underpin the department's agenda to promote best practice. In commenting, the IPC recommended a number of amendments to the ROAME. These included that more information on expenditure plans should be provided, the evidence of market failure needed to be strengthened in the rationale, and that thought should be given to the ways in which SMEs would access through intermediaries, the material to be provided. The chairman is recorded as summing up the discussion, and concluding that the IPC was content to fund the proposed work. He asked for the revised draft incorporating the committee's comments to be circulated, before submitting proposals to ministers.

6.4.3 Ministerial Approval

Where approval needs to be sought from ministers, proposals are presented to ministers in the form of 'Ministerial Submissions', which outline the case. In the previously mentioned conversation with FRM Directorate, the importance of pointing out the reasons why ministers should give their approval, and detailing the potential benefits which could accrue from expenditure, was emphasised. In making submissions to ministers, the programme ROAME statement is normally attached as an annex to provide ministers with further information should they require it. Examples of this happening are provided in section 6.4.5 below. As

appropriate the case will detail any options and will recommend a particular line of action to be taken (Hennessy, 1990, pp. 494-495).

To assist ministers in making a decision, officials will often seek a meeting with them to explain the case for support in more detail, and answer any questions he or she may have. For example, in helping to gain the Secretary of State's approval for the MPI programme, the head of the Manufacturing Technologies division (Grade 3) met with him to explain the rationale for supporting the scheme. A brief dated 5 September 1990 was drafted for the division head, to help prepare him for presenting the case to ministers and answer their questions. The brief expanded on the argument for support presented in the ROAME, and for each point raised in the ROAME details of the supporting evidence was given (see also section 6.4.5 which follows). The process of advising ministers is not recorded in the current guidance.

File papers provide insights into the process of advising ministers on support policy. For example in making submissions to ministers, officials structure their advice under the headings of 'Issue', 'Recommendation', 'Timing', 'Argument', and 'Background'. In the 2 December 1991 submission to the Secretary of State proposing a further programme of SMART competitions, the branch head (Grade 5) states the 'issue' as whether to approve a further three years of SMART competitions at a cost of £42,000,000, over six tears. The 'recommendation' was that he should approve the proposed funding, and recommend support to the Chief Secretary of the Treasury. 'Timing' was stated as immediate, as it was hoped to launch the new competition on 20 January 1992, and preparations needed to be put in hand as soon as possible. The starting point for the 'argument' was the rationale for funding which was set out in the ROAME statement. This was summarised as providers of finance being unwilling to invest in small technology projects, where typically the sums of money required are below £200, 000. SMART, it was suggested, was designed to 'pump prime' such projects. Under 'background', reference was made to the earlier pilot scheme in 1986, and the introduction of

the main programme in 1988. Details of the costs involved were given, and details of the grants to be awarded in the new round of competitions were briefly summarised. Confirmation of the availability of funds was made.

6.4.4 Treasury Notification

HM Treasury require departments to notify it of proposals when the level of proposed expenditure is equal or greater than a stated value which they determine. During 1999, the level for innovation programmes was £194 Million (net) (DTI, 1999a, p. 7). Examples of proposals being submitted to the Treasury are MPI, SPUR, and the New SMART scheme, and they are described in greater detail in section 6.4.5 below.

6.4.5 EC Approval

For programmes funded under the Innovation Budget, guidance, (DTI, 1999a, p. 48) informs officials that approval must be sought from the European Commission where the total project value (grants plus participants' contributions) exceeds 25M ECU. An exception is highlighted, that of work to be undertaken under EUREKA, where the threshold is raised to 30M ECU for participants' costs, or 4M ECU for national costs.

Examination of file papers and the author's experience, provides further examples of programmes being subjected to the various stages in the approval sequence. In a minute dated June 1988 to the Industry Minister, the Head of DTI's Manufacturing Technology and Materials division seeks ministerial approval for the proposed Computer Aided Engineering programme. The minute confirms that the IPC approved the programme and the budget for submission to ministers on 24 May 1988, and refers to the ROAME statement being attached for reference.

As the official responsible for the development and administration of MPI, he is able to confirm that the programme went before AMTC, the IPC, DTI ministers, the Treasury for approval, and finally was notified to the European Commission under the State Aids Rules, (see appendix H, section H.3.4, p. 137). Evidence of the approval path for the programme is also provided in the files. A brief in the form of a minute submitted by the author's line manager to the Head of the Manufacturing Technology division, dated 5 September 1990, refers to the division head's meeting with the Secretary of State to discuss his approval of the programme. A submission to AMTC dated 21 November 1990 records MPI having been presented to AMTC on 10 April 1990, where the proposals received the committee's endorsement. That MPI had subsequently received ministerial approval is also noted.

A letter from HM Treasury to a branch head in DTI's Research and Technology Policy (RTP) division dated 20 November 1990, thanks the branch head for a letter dated 30 October. The Treasury letter is concerned with the proposed introduction of two schemes, MPI and SPUR, and refers to Treasury economists having discussed the arguments surrounding market failure for the proposed programmes. In respect of MPI, the letter continues by stating that the Treasury accepts that there are some general arguments supporting the inability of small firms to perceive the approach required to achieve an optimal installation. The 'demonstration concept' proposed in MPI was viewed in principle "*as an effective way of tackling and correcting a demand-side information failure*". A letter back to the Treasury dated 30 November 1990 from the RTP branch head, states that it is DTI's understanding that the Treasury are now content with the proposals for the MPI programme. Inspection of the files suggests that no further discussions took place with HM Treasury relating to the introduction of the scheme. Officials took the lack of further dialogue as implying that they had received Treasury's approval.

Notification of MPI to the European Commission is evidenced in a letter dated 5 October 1990, from the Office of the United Kingdom Permanent Representative to the European Community (UKREP), to the branch head in DTI's RTP division. The letter confirms that the Commission has been advised informally of DTI's intent to introduce MPI, and relates how preliminary discussions with the Commission suggest that the proposals for MPI were unlikely to cause difficulties. On 19 December 1990 the final draft of the formal submission of the case for supporting MPI, was sent to UKREP for forwarding to the Commission. In a letter dated 31 January 1991, the European Commission notes that MPI's support will be aimed substantially at firms falling within the specified Standard Industry Classification codes. This was taken to imply that firms in other sectors would be eligible for support, albeit at a lower level. DTI were requested to supply details of the other sectors that would be eligible for support. The Commission also asked the department to clarify who the beneficiaries would be of the administrative spend (approximately £2,000,000), and whether the grants would be taxable.

On 12 February 1991 the author forwarded a response to the Commission's questions. It was explained that MPI was targeted at manufacturing firms, and that the industry codes which had been quoted contained the main concentration of manufacturing firms. However manufacturing firms occurred in sectors not normally associated with production, for example companies operating in the toys and goods areas. The role of the scheme contractor, SAC Hitec, was explained, and that the fees paid to them were in support of their management of the programme, and generating a margin of profit. It was emphasised that to keep levied charges in reasonable bounds, invoices would be submitted on the basis of time and materials consumed, and invoicing was to be subjected to financial and technical auditing by DTI. On the issue of taxation, DTI advised that the grant was to be regarded as a contribution towards an applicant's incurred costs, and would therefore count towards profits. Approval to operate MPI was subsequently received from the Commission. A letter signed by Sir Leon Brittan dated 12 April 1991, to the Secretary of State for Foreign and Commonwealth Affairs (The Right Hon.

Douglas Hurd, CBE, MP) states "*I have the honour to inform you that the Commission has decided not to raise any objections to the schemes* (one of which was MPI) *under Articles 92/93 EEC*".

Returning to SPUR, the 20 November letter from the Treasury records the useful discussion between their economists on the market failure issues. The letter continues that the Treasury particularly questioned the claimed market failure in the supply of finance to small firms for AMT projects, because the banks are risk adverse and lack technical resources. They argued that the problem centred around such projects as simply being too risky, when measured against the commercial test of average returns on investment. The case demonstrating market failure was therefore not substantiated. However it was recognised that there was a consensus between Treasury and DTI ministers that some assistance for SMEs was desirable, and it was suggested that SPUR be treated as an experiment, with an early appraisal of performance to be undertaken. In the 30 November response (see above in relation to MPI), the RTP branch head agrees with Treasury's proposals, and confirms that an early evaluation will be undertaken. HM Treasury welcomed DTI's agreement on 19 December 1990.

Appendix G, sections G.4.1, p. 114, G.4.2, p. 115, and sub-section G.4.1.1, p. 115, shows the M90s programme to have passed through AMTC, IPC, and then ministers. Dated 4 March 1999 a submission to the Industry Minister and the Secretary of State seeks their approval for the New SMART Scheme. The submission refers to the IPC having approved the ROAME statement, and the ROAME being attached. The submission also draws ministers' attention to the need for the department to notify the Treasury, and the European Union under State Aids Rules, since the total spend will exceed £15,000,000.

6.4.6 Approval Weighting

Looking at the approval process the author proposes that it is the stage of IPC approval that carries the most weight. Advisory committees, as their title suggests, are there to advise officials and have no approval authority. In contrast, the individual programme committees have full authority vested in them for the approval to fund programme work. The DTI *Finance Handbook* (DTI, 1996) states that the "*IPC should advise the budget holder on his management of the budget*" (annex 3.4.A , appendix 1). The budget holder should, guidance continues, normally seek the committee's advice on ROAME statements for programmes and projects, responses to evaluation recommendations, and the setting of budget priorities. Although the emphasis in the guidelines is placed on the advising role of the IPC, in reality the author observes that officials normally refer to the process of submitting ROAMEs to an IPC as that of obtaining IPC approval.

The author would argue that the perception of the IPCs having an approval rather than simply an advisory function, stems from the committees being chaired by the budget holders (see chapter 5, section 5.2.6), who have within their delegated limits the authority to commit expenditure. In participating in IPC meetings the author has observed that if members and the chair person are satisfied with the cases presented to them, the chair person will make recommendations for the commitment of funds (or a recommendation to commit expenditure to a higher authority) during the IPC meeting itself (see also section 6.4.2 above). The decision is usually recorded in the minutes of the IPC which are circulated to members and other interested parties within the department.

IPCs having an approval remit, rather than being limited to an advisory role, suggests the former have greater powers than the latter, thus indicating that IPCs carry the greater weight. However, as can be seen through inspection of sections 6.4.3 to 6.4.5 above, the successive stages of approval carry with them an increase in the level of funds which may be authorised.

But it is argued that it is the role of the IPCs which remains critical in the approval sequence, and therefore, they can be assigned the highest level of weighting. This conclusion is derived from several considerations. Firstly, in an interview with Dr. Draper, a Grade 6 in DTI's Manufacturing and Technology Management Division [Interview 5], it was explained to the author how the concept of ROAME statements was introduced to help protect ministers from subsequent criticism following the introduction of a programme. Ministers on the whole are not specialists, neither do they have the time to study cases for support in detail. By going through the ROAME process officials offer up proposals that are well researched, reducing the likelihood of future political embarrassment.

Chapter 3, section 3.3, argued that submitting ROAMEs to ministers formed part of officials' role of advising ministers. ROAMEs submitted to ministers form the basis of advice regarding the funding of schemes. Thus the ministerial role in the approval process is essentially restricted to ensuring proposals for support are conformant with his or her priorities, and those of the government. The author observes that given this scenario, the final responsibility to ensure the quality of the advice presented lies essentially with the IPC, rather than ministers. As recorded in section 6.4.2 above, the case for support contained in a ROAME is rigorously tested for its credibility through the challenging of officials' evidence by the IPC members. Thus, it is argued, the critical testing of cases by an IPC is paramount in ensuring the credibility of cases for support, and therefore the IPCs should be assigned a higher weighting than ministers.

The matter of weighting the successive stages of approval was also discussed with Dr. Peter Bentley (PR11), (a former Director, Finance and Assessment, in DTI's Business Link Directorate). He supported the author's views. In more recent times ROAMEs were often developed in response to ministers' wishes to introduce a programme, for example the Business Link initiative. Therefore conformance to political priorities was not an issue for ministers to

worry about. Bentley took the view that the weighting on ministerial approval was consequently close to zero. Looking further up the approval chain, he added that in most cases it is not necessary for schemes to go on from ministers to the Treasury, and the European Commission. Where cases had to be forwarded, the Treasury, he felt, were always concerned to look closely at new cases for expenditure, but usually limited their discussions to recommending modifications or additions to ROAMEs, as against responding with a total rejection. Bentley was not aware of any case where the Treasury had refused to sanction a DTI ROAME. The European Commission was principally concerned with ensuring that programmes operated by member states did not distort competition in the European Union, as against majoring on the strength of their rationale. Summarising, Bentley observed that it is the IPCs that are the big influence on the shaping of schemes, and should therefore be assigned the highest weighting.

6.5 Making the Ground Fertile for Approval

The author observes that officials take steps in advance of requesting formal approval for programmes to ensure that 'the ground is made fertile' for such approval. The steps taken are described below.

6.5.1 Influencing the Decision Makers within the Department

DTI guidance advises project officers "*to discuss their outline proposals with the approving authority to ensure a smoother course in the approvals process and avoid nugatory effort*" DTI (1999a, p.45). Examination of the author's experience shows this to be in reality only one part of a more involved process. Throughout the development activity, officials circulate details of draft proposals to colleagues with an interest in the proposed scheme. In particular, drafts are circulated to those directly involved in the approval process such as line management, and members of the relevant IPC (DTI, 1996b, p. 50). The latter are especially important as,

without the support of IPC, proposals cannot be taken forward. Here officials, in the drafting of ROAME statements, aim to obtain the views of committee members on the nature of market failures, and the strategies being proposed for their negation. In each instance the comments received are incorporated in successive drafts, helping to build robust cases for support. Appendix H, section H.4, p. 138, shows how draft copies of the MPI ROAME statement (ROAME, 1990a) were circulated to IPC members, and their comments incorporated in the final draft.

Support of the decision makers is engendered. The decision makers are conditioned to be favourably disposed towards proposals through early awareness (there are no surprises when they are presented in IPC). Furthermore inviting and incorporating their comments on proposals generates a sense of ownership which renders them supportive of new introductions. Incorporating their comments also makes it hard for them not to lend their support, as they would seem to argue against themselves. It is considered by the author as very important, and best practice, to consult IPC members during the drafting of ROAME statements. This is a view shared by others, and expressed during an interview of a colleague, Mr. Frank Rott Grade 7 [Interview 12]. For him, by inviting IPC members to comment on drafts, and through asking them to advise on issues such as objective setting and delivery strategies, they become champions of what he or she wishes to achieve and supportive of his or her approach. Like the author, the value of involvement was clearly demonstrated through observing the passage of proposals whilst attending Innovation IPC meetings. The interviewee had always consulted during the development process, and contrasted his own experiences with those of others who had not. In his case he met with no serious problems and approval was received quickly. In contrast, cases where project officers had not previously consulted members, the proposals were taken apart and rejected, that is, the rationale was challenged and found deficient.

In developing ROAMEs, Rott also highlighted the value of one to one meetings with people having a high level of influence within IPC. For example, the interviewee had recognised that the director of the then Economics Statistics Evaluation Technology Standards Directorate, an economist, and well respected for his knowledge of the issues surrounding programme viability, held sway in the Innovation IPC. Ease of approval was partly attributed to working with one of his Grade 7s in drafting a ROAME statement. The Grade 7 subsequently advised his director of the efficacy of what was being proposed, engendering his support. The author concurs, having similarly consulted in determining the content of ROAME statements. Examples of where best practice had been applied were reported by Rott. They were in gaining approval for the Innovation and Technology Counsellors programme (Second Phase), and the Innovation Credits Scheme (Phase 2). An example of a case initially failing to obtain approval in IPC through insufficient consultation, was the Focus Technical programme.

Appendix H, section H.4, p. 138, illustrates other ways in which the decision makers are influenced. Again in MPI a digest of a research paper was produced which was passed to an economist who was a prominent member of the IPC. The points raised in the digest helped convince him of the need for the MPI programme [Interview5].

6.5.2 Influencing the Opinions of Ministers

It is the job of civil servants to provide their ministers with advice (Hennessy, 1990, pp. 494-495; Weller and Stevens, 1998, p. 579), and the author observes several methods by which this remit has been exploited to help form their opinions such that they are sympathetic to proposals. One approach, adopted in developing MPI, has been arranging for ministers to visit manufacturing SMEs. Senior officials informed the author that a programme of visits to SMEs was arranged for the Industry Minister, which helped him to gain knowledge first hand of the problems that firms were facing. The visits were viewed by officials as important in helping prepare the ground for the introduction of MPI. His improved understanding encouraged him

to support proposals to address the problems which he had seen (see appendix H, section H.4, p. 138).

6.5.3 Maintaining Ministerial Interest in Programmes

Another mechanism witnessed by the author to obtain a sympathetic stance for the continuation of existing schemes is where ministers are invited to participate in programme events. It is the usual practice for officials to provide written briefings for ministers when they attend such events. The requirement to provide a ministerial brief provides officials with the opportunity to advise the minister about the status of market failures, and how well schemes are addressing them. (The observation was expressed to the author by his line manager, Dr. Draper, a Grade 6, and subsequently reaffirmed by a colleague, Mr. Peter Munday, a PR9). This ensures that ministers understand the rationale for their continued support [Interview 5]. Appendix G, section G.4.2, p. 115, provides examples. In the M90s programme, ministers were invited to and attended the Management Action Briefing seminars, and the Under Secretary of State for Industry (Mr. Hogg) also launched the first version of the PA Report (PA, 1989), (see also Interview 5).

6.5.4 Orchestrating Mandates

Sub section 6.3.3.1 discussed the role of Cabinet Office Advisory Committees. Such committees were exploited by departments to obtain political mandates to carry out what they wished to do [Interview 6]. For example, ability to use ACOST as a mechanism to help set mandates arose from the Council's influence on policy making. Although assigned advisory status, ACOST wielded considerable power to shape policy. Its ability to influence policy was derived from its high status in Whitehall. High status was in turn derived from the Council being 'owned' by the 'Cabinet Office', which is the ultimate policy co-ordinating body within government (Smith, Marsh, and Richards, 1993, p. 586; Brady and Catterall, 1997, p. 510).

Status was also derived from ACOST reporting directly to the Prime Minister. The setting of mandates was achieved by departments influencing the thinking within ACOST. Members of the Whitehall departments sat on ACOST where they were able raise issues which they had identified, and push for them to be discussed by the Council. In debate, departmental representatives were also able to recommend strategies for the resolution of problems, which were often adopted in the final reports.

As discussed above, the outcome from the consultation process was the publication of final reports. These made recommendations for what action government departments should take to resolve issues which have been identified. The high status assigned to ACOST required the Whitehall departments to publish written, official responses to the ACOST reports, setting out how they would respond to the recommendations which had been made. Usually the department having lead responsibility for the subject area of an Advisory Committee report would take responsibility for drafting the 'official response'. Official responses were usually published under the signature of a department's Secretary of State. They described how the lead department (in collaboration with others) would respond to the committee's recommendations. In so doing the Secretary of State committed his or her officials to specified courses of action (the mandates). As just described, officials were often successful in the consultation process, in getting issues and their ideas for resolving difficulties to be the subject of recommendations in the final reports. The associated official responses would contain mandates for responding to recommendations, and thus officials were able to use ACOST to achieve mandates for those things they wished to do [Interview 6].

From his direct experience of drafting official responses, the author observes that officials worked to show that government thinking was ahead of the advisory councils by pointing to initiatives which were already in place, or planned. Officials were helped by having early warning of the content of final reports. They were able to monitor the development of ACOST thinking through

their membership of ACOST committees, and by ACOST circulating draft reports to interested parties [Interviews 5 and 6]. Examples of official published responses are the *Advanced manufacturing Technology; Government Response To The ACARD Report - New Opportunities In manufacturing: The Management Of Technology* (DTI, 1984) and *Advanced Manufacturing Technology - Government Response to the Report by the Advisory Council on Science and Technology* (DTI, 1991c). Examples of activities in which ideas were moulded by Advisory Council Findings were the MPI programme (see appendix H, section H.2.4.1, p. 130), and the introduction within DTI of the Innovation Advisory Board, [Interview 17].

6.5.5 Ministerial Timing

Approval for programmes is more likely to be given when proposals seem to solve problems which are high on ministers' agendas. Therefore officials choose the best times to submit proposals by monitoring ministerial priorities through dialogue with the ministers' private offices [Interview 5]. They then submit proposals when ministers are most likely to be interested, and thus more likely to be sympathetic to officials' proposals. Chapter 5, section 5.2.5 provided an example. It was explained how officials considered that approval of the first phase of the M90s programme, was in part due to submitting proposals to the Secretary of State at a time when his 'brain child', the Enterprise Initiative, had become established. He was consequently more receptive to new schemes being added to the umbrella initiative.

6.6 Inputs

Draft ROAME statements are submitted by directorate staff to the relevant IPC secretary. The DTI *Finance Handbook* refers to an IPC's role as being to examine ROAME statements for individual programmes or projects (DTI, 1996b, section 3.4, paragraph 3.4.6). The *Innovation Budget Guidelines* inform officials that the final versions of ROAMEs should be submitted to the Innovation Budget Management Unit secretariat, (not later than 10 working days before the

date of the IPC meeting), (DTI, 1999a, annex 8, p. 101). IPC members will draw on their personal experience and that of colleagues in appraising cases for support. Examples of officials calling on their experience and knowledge in appraising ROAMEs in an IPC are given in section 6.4.2 above.

6.7 Outputs

DTI (1992, pp. 11-28, 33-34, 1996a, pp. 32-43, 49-50, 112, 1996b, 1999a, pp. 27-42, 43, 101) shows the output of the process to be an approved ROAME statement, that is, approval of the case of support to proceed with proposals. Attending IPC meetings and inspection of IPC papers shows that approval is normally given by the IPC chairman during a meeting, with his or her approval conveyed as a record in the minutes of the meeting. Where final approval rests with a higher authority, that is, ministers or HM Treasury, confirmation of approval is in each case normally given in a minute or letter to the project officer. In the case of EC approval, agreement will be relayed in an Official Letter from the European Commission.

6.8 IDEF0 Level 2 and 3 Diagrams for 'Identification of Issues'

The above analysis suggested the following IDEF0 Level 2 and 3 diagrams, figures 6.3 and 6.4 respectively. Figure 6.3, the level 2 diagram, describes the component process of 'Issue Identification'. Figure 6.4, the level 3 diagram, details the process elements comprising 'Issue Identification'.

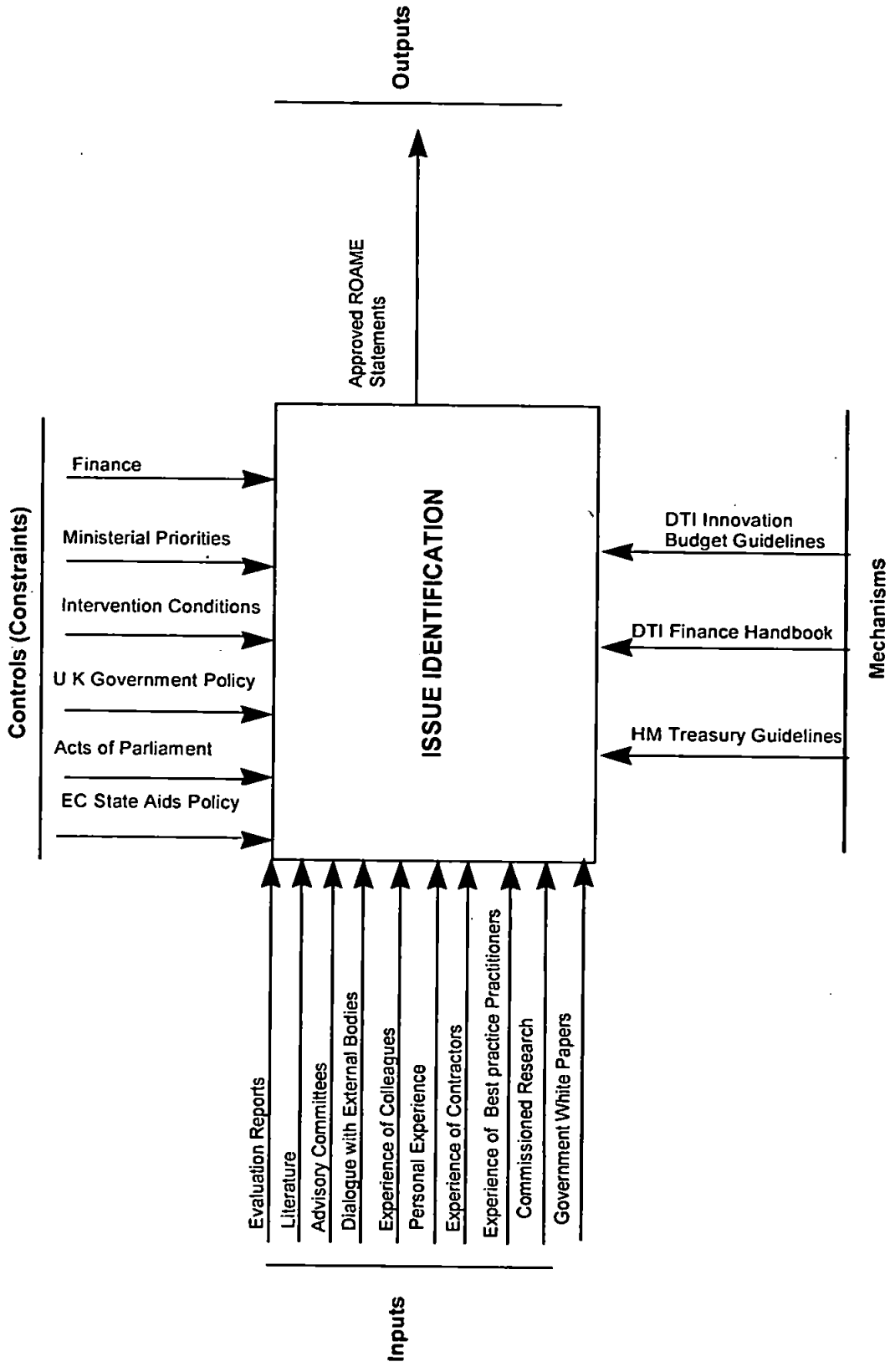

Figure 6.3 IDEF0 Level 2 Diagram: 'Issue Identification'

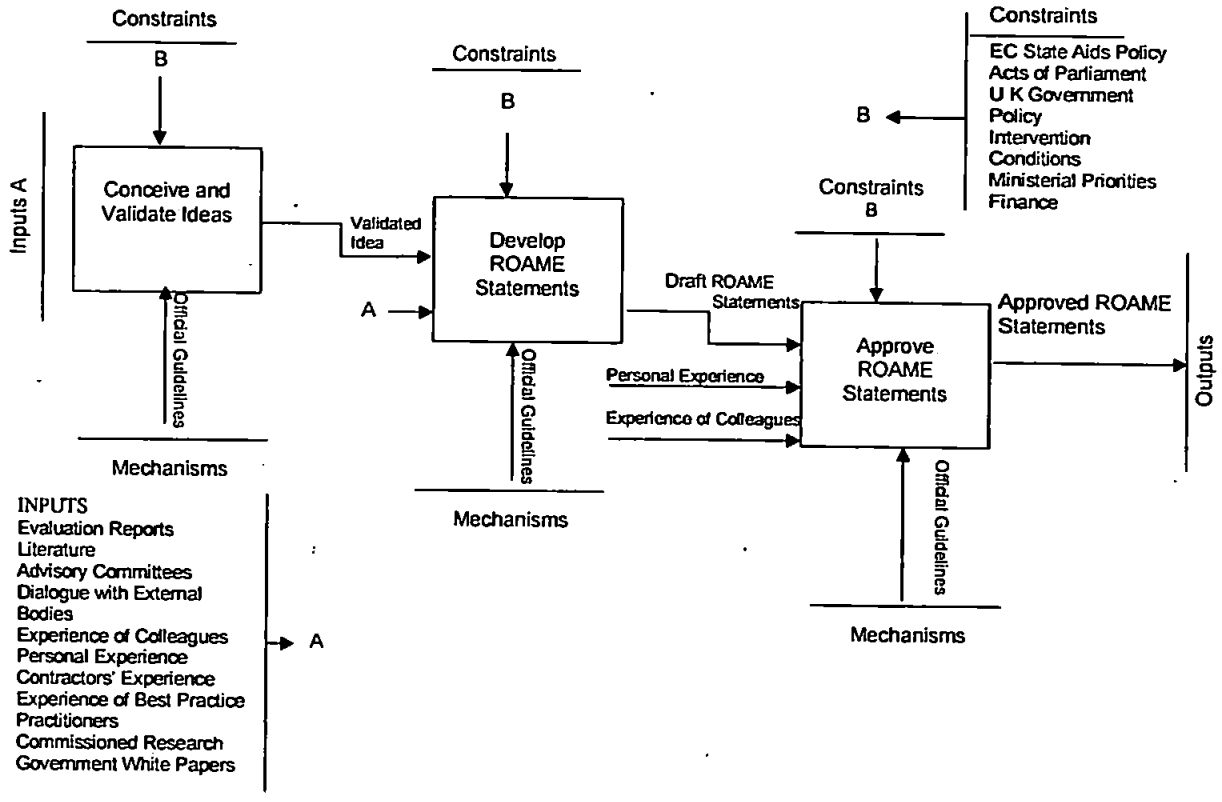

Figure 6.4 IDEF0 Level 3 Diagram: Process Elements Comprising 'Issue Identification'

6.9 Conclusions

The first component of the overall process of designing and administering schemes has been mapped, and an IDEF0 Level 2 diagram produced which describes the component process of 'Issue Identification' (figures 6.2 and 6.3). Thus the first step in answering the fourth research question put in chapter 3, section 3.8.3 has been taken by responding to the supplementary query:

(a) "What are the mechanisms involved in 'Issue Identification'"?

Analysis has shown this component process to comprise three process elements, these being 'Conception and Validation of Ideas', 'Development of ROAME statements', and 'ROAME Approval'. The former represents a significant observation, in that the *Innovation Budget*

Guidelines does not recognise the existence of this important function. It is concluded that reference to this stage should be included in guidance, as it is the means by which officials 'track the market' and introduce timely responses to changing support requirements. This is discussed further in chapter 10, sub-section 10.4.3.1.

Research has shown that responsibility for the development of programmes lies predominately with officials. Whilst ministers are involved in the process, their role is essentially that of setting political priorities, and approving programme spend above a pre-specified limit, (sections 6.1.1, 6.4.3, and 6.4.6). Attainment of value for money in designing and operating programmes is observed to be of primary concern for officials, at every stage of the design and administration process.

Chapter 3, section 3.3.1, revealed how programme rationale comprises the twin components of the presence of market failure, and demonstration of the means to address problems, and that the satisfaction of these two criteria is key to achieving VFM. However, it is observed that the measurement of VFM, and the related task of setting priorities for addressing market failures, is not an 'exact science'. Rather the perception of VFM is somewhat subjective, being influenced by ministerial priorities, peoples' personal views, and their position within their respective departments (section 6.1.1). Nevertheless, certain ground rules exist in ensuring that VFM is likely to be, or has been, achieved. These rules provide a source of reference in determining value for money. Officials must be able to demonstrate a clear rationale, and in this task they are assisted by there being well defined areas of market failure, in which historically it has been accepted that it is appropriate for government to intervene (see chapter 5, section 5.2.4). By defining objectives for how a programme will impact on market failure, it is possible in subsequent evaluation to assess an intervention's performance, by measuring how well aims have been met in the field (section 6.3.4). It can thus be concluded that despite the imprecise

nature of the evaluatory process, officials are nonetheless able to provide assessments of VFM with acceptable levels of credibility.

Inspection of the process of developing ROAME statements suggests that the achievement of VFM is aided by the rigour which the process displays. Essentially a sequential task, ROAME development comprises a series of stages in which the rationale for intervention is increasingly built, first through detailed and comprehensive research of the market problems, and second via the close examination of draft proposals by informed opinion to assess their viability. In this way the nature of market failures become well understood, and confidence in the ability of draft strategies to successfully reduce these failures, and thereby secure good value, is built (sections 6.2, 6.3, and 6.4). In the hierarchy of successive vetting of proposals, it is the Individual Programmes Committees that most influence the shape of programme design (section 6.4.6). Importantly, it is noted that in developing a programme rationale, officials focus on addressing the underlying causes of market failure, rather than majoring on reducing the symptoms of problems.

It is also concluded that the steps taken by officials to make the ground fertile for approval actually serve to improve the efficiency of the design process, by helping to ensure that good programmes are brought forward. The process of influencing the 'decision makers' involves making them aware of the important issues, and thus they are better informed of problems and how they might be solved. The people concerned therefore become more receptive to giving their approval for new proposals, because they have been imparted with sufficient knowledge to make decisions.

Understanding of the scope and operation of the programme network has been furthered. Within government the network transcends departmental boundaries, with examples of the Treasury and the European Commission participating in the approval path. Inspection of the

approval process reveals interaction between ministers and their officials, and between officials themselves. Sub-section 6.2.3.8 also illustrated how ministers participate in the network by indicating their priorities. This observation accords with that made in chapter 5, section 5.2.6, concerning the profiling of budget spend, where ministers indicate to officials their priority areas for action. Thus it is concluded that these observations provide further evidence supporting the decision to adopt a top-down strategy in the analysis of the programme design process (chapter 3, section 3.3).

Evidence of the Cabinet Office having a role in informing programme policy is provided by the operation of the former advisory councils, (sub-section 6.3.3.1). Through consulting widely recognised experts in their fields, the councils were able to determine with confidence, the issues in science and technology which gave cause for national concern. Consultation of recognised experts lent integrity to their recommendations for addressing the issues identified. In particular, the high status within government of ACOST, derived from it being owned by the Cabinet Office and reporting to the Prime Minister, gave rise to the council having been a primary source of influence on scheme design. The reporting of findings to the top of government obliged the Whitehall departments to respond to the recommendations it made.

Consultation of a broad church of opinion rendered the advisory councils a major node in the programme network, acting as an important mechanism in informing officials engaged in the design process. Within the ACARD and ACOST structures, officials were brought into contact with their government colleagues, representatives of academia and industry, and on occasions, the Prime Minister herself. The views of the Whitehall departments were taken into account through the dinners held for the Secretaries of State. Sections 6.2.3 and 6.3.3 have provided further examples of how officials interact with external bodies in the design process. Officials interrogate the knowledge held in organisations such as the HEIs, the RTOs, and consultancy firms, to identify market failures and in developing delivery strategies for their negation. Such

organisations are also engaged in the capacity of contractors, to undertake market research towards gaining a better understanding of market failure.

It is suggested that no single information source predominates in the overall design process, rather each contributes to the level of 'noise' surrounding the discussion of problems, from which dominant issues emerge to be resolved (section 6.1.1). The author proposes that these observations provide the substantive evidence which demonstrates the extent of the consultation process in designing support policy. As a final observation, the process is seen as involving a breadth of knowledge sources, which are investigated in depth. The substantive research that is undertaken serves to provide a high level of confidence that resulting proposals will achieve good value for money, if implemented. Importantly, it is also concluded that such high levels of research, coupled with the role of 'approval' in challenging proposed rationales for intervention, helps prevent ministers and their departments from being embarrassed due to unforeseen circumstances arising (section 6.4.6).

As described above, chapter 5, section 5.2.6, illustrated how ministers are fully involved in shaping the final strategy for support, by discussing with officials the areas upon which innovation budget spend is to be focused. Nevertheless this observation is not seen as conflicting with the observations made in section 6.4.6 above, where it was argued that it is the IPCs which are the most influential in the approval process. In the case of the former, ministers discussing with officials the strategy for allocating funds within the Innovation Budget, can be regarded as a further mechanism by which they inform people of their priorities. This may be contrasted with the role of the IPC, which is concerned with the design and approval of individual programmes, and hence it is proposed that the committees wield the most influence.

Two areas for improvement to current guidance have been identified. Guidance does not recognise the important process of conceiving ideas (section 6.2), and the easing of the approval path by making the

ground fertile for authorisation (section 6.5). These issues are discussed further in chapter 10, section 10.4. Finally, the author argues that study of the process of 'Issue Identification' has revealed it to be complex and, he suggests, to contain a significant proportion of policy making. These findings provide support for the views of other researchers, who have argued that much policy making continues after the publication of white papers (chapter 3, section 3.3, and chapter 6, section 6.4.6).

For further examples of how the mechanisms described in this chapter have been deployed in practice, the reader is referred to the case study examples described in appendix D, sections D.3 and D.4, pp. 78-79, appendix E, sections E.2.2 and E.2.3, pp. 85-86, sections E.3.1-E.3.3, pp. 87-89, and sections E.4.1 and E.4.2, pp. 91-93, appendix F, section F.3, pp. 96-98, section F.5, pp. 99-100, and section F.7, p. 101, appendix G, sections G.2.1-G.2.4, pp. 107-113, sections G.3.1 and G.3.2, pp. 113-114, and section G.4.1-G.4.2, pp. 114-115, and appendix H, sections H.2.1-H.2.4, pp. 128-132, sections H.3.3-H.3.4, pp. 135-137, and section H.4, pp. 137-138. Chapter 7 now discusses the next component process of 'Programme Implementation'.

CHAPTER 7

PROGRAMME IMPLEMENTATION

7. PROGRAMME IMPLEMENTATION

7.1 Introduction

Chapter 5 described the development of an IDEF0 Level 1 diagram, which provided an overall description of the process of designing and implementing support programmes. Chapter 3, section 3.3, revealed that the overall process of programme design and administration comprises the three components of 'Issue Identification', 'Programme Implementation', and 'Evaluation and Feedback'. Chapter 6 then followed and mapped the component process of 'Issue Identification'. It was found that the component itself comprised the three elemental processes of conceiving and validating ideas, developing programme ROAME statements, and then finally, obtaining approval to introduce an activity.

This chapter takes the mapping stage one step further by investigating the next process component, 'Programme Implementation'. In so doing, a response is provided to the second supplementary question (b) of the fourth research question proposed in chapter 3, section 3.8.3 thus:

Research Question (iv): **Discovering the Nature of the Design Process –**

(b) "What are the mechanisms involved in the task of 'Programme Implementation'"?

The author observes that whilst implementation plans are described in ROAMEs, it is often the case that implementation strategies are fully developed only after approval has been received. This is particularly so in the case of advisory schemes. The purpose of this chapter is thus to analyse the approaches which have been adopted in the running of programmes, in order that this component of the process model could be developed.

It is shown that 'Programme Implementation' is made up of three principal administrative activities, these being 'Appraisal' 'Monitoring' and 'General Administration' (The first two of these activities were introduced in chapter 6, sub-sections 6.3.5 and 6.3.6, when discussing the development of ROAME statements). Comparison of arrangements in R & T and advisory programmes shows differences in the way schemes are implemented, and these are also analysed and discussed.

7.2 Appraisal

A clear distinction is made between the appraisal of programmes, and the appraisal of projects contained within programmes DTI (1992, pp. 21, 1996a, pp. 41-42, 1999a, pp. 39-40). Appraisal of programmes is represented by the process of approving ROAME statements. ROAME approval was dealt with in chapter 6 section 6.4. For the latter, 'Appraisal' refers to the appraisal of individual projects within a programme, and is the focus for discussion in guidance. The DTI *Finance Handbook* (DTI, 1996b, annex 9.1.B) describes the task of 'Appraisal' as being concerned with the selection of projects within a programme. The *Innovation Budget Guidelines* provide more detail on the role of 'Appraisal'. 'Appraisal' comprises the process of selecting projects such that their objectives are coherent, with the overall aims of the programme of which they form part (DTI, 1992, 1996a, 1999a).

Guidance lists a number of other conditions which projects in R & T schemes, particularly those for which R&D is the principal activity, must meet to qualify for financial support. These can be divided under the headings of the Technological and Financial Criteria (DTI, 1992, pp. 7-9, 29-30, and annex 1). For example in the former, organisations applying for the funding of projects must be able show that proposals are innovative, that research is likely to lead to outcomes for which there are markets, and that the necessary technological resources in terms of skilled staff and equipment are available. Appraising project applications against the financial criteria, includes assessment of the financial viability of applicants, and the level of grant asked for expressed as a percentage of the total eligible costs, e.g. salary costs, overheads, and equipment costs (DTI, 1992, p. 2, and annex 4, 1996a, pp. 130-

131, 1999a, pp. 118-119). For all cases, officials are advised that project work must be supportive of overall programme goals. Importantly it is noted that project proposals must also display additionality. In discussing the appraisal of applications for financial support, the DTI *Finance Handbook* (DTI, 1996b, section 9.3) states:

"*Additionality is another criterion that must be met before financial assistance is approved, the aim of which is to establish that assistance is necessary for the programme or project to go ahead in the form proposed*".

(For an explanation of what 'additionality' entails, see chapter 5, sub-section 5.2.4.1 (vi)).

It is interesting to note the differences in approach to appraisal between programmes for which R&D is the principal focus, and those which are geared to providing firms with advice. For the former, appraisal is undertaken by officials. In the latter case, responsibility for appraisal usually falls to others employed outside the civil service. The author discussed the differences in approach to appraisal (and also monitoring in projects – see section 7.3.2 below) with his colleagues. In investigating the underlying reasons, it is necessary to bear in mind that the Treasury allocates money to departments under the three headings of "Programme Spend", "Capital Expenditure", and "Running Costs". Beginning in the 'Thatcher Years', the Treasury placed tight constraints on departments' running cost budgets, which in turn constrained the numbers of civil servants that could be employed. Thus to avoid officials being over burdened with work, there grew as a result the tendency, wherever possible, to 'contract out' for the services of specialist staff. Such contract spend is found out of programme funds, providing senior officials with greater flexibility in how they resource tasks; for example staff are hired only as and when required. An example lies with the MPI programme. As recorded earlier in chapter 6, sub-section 6.3.5.1, the MPI ROAME statement describes the approach of employing a scheme contractor as to "*avoid placing any additional burden on the restricted resources in the Regional Offices, and headquarters division*" (ROAME, 1990a, paragraph 4.1), (see also appendix H, section H.5.1, p. 138). In CI, the scheme contractors looked after the listing of consultants, and the matching of these firms

with the applicants' needs. The Enterprise Counsellors were responsible for project appraisal and monitoring (appendix F, section F.8, pp. 101-103).

However, in R&D programmes, difficulties arise in contracting the appraisal function to external personnel. The policy criteria are considered complex, making it very difficult to judge the eligibility of cases [Interview 9]. For example, in appraising R&D project applications, officials must ensure that project objectives will help address each of the perceived market failures, of which there may be several. Judgements on project additionality must be made, and an assessment of whether proposed project work falls within DTI's remit must also be undertaken. It would not be correct for DTI to fund an industry sector that fell to the responsibility of another department. DETR for instance is the lead Whitehall department for the construction industry, MAFF for the food sector. In addition, R&D projects exhibit diversity in their project goals and content, adding to the complexity of the task. The complexity of the appraisal task dictates that assessment of applications be undertaken by people who are fully conversant with policy [Interview 9]. For example in the SMART and SPUR schemes, appraisal of applications was undertaken by civil servants employed in DTI's Regional Offices (latterly merged into the Government Offices), (see appendix E, sections E.3.5 (p. 90), and E.4.4 (p. 94) respectively). In GICP, project appraisal was the responsibility of DTI headquarters staff, (see appendix E, section E.2.4, p. 86).

In advisory programmes, the policy criteria are more straight forward. Many of the criteria which constrain the eligibility of research and development proposals do not apply in consultancy projects. Thus people have a simpler task in interpreting policy. For example, appraisal in consultancy projects is not concerned with making judgements on the presence of market failures such as 'risk and uncertainty'. In advisory schemes the market failure argument often hinges around firms lacking the necessary information (see chapter 6, section 6.1.1), and that this problem applies to small firms as a whole. For example in the Consultancy Initiatives (CI), the lack of information on consultancy services and a perception by firms that consultants represented poor value, were cited among factors inhibiting SMEs generally from hiring external help (see appendix F, section F.3, p. 97). Thus the eligibility of project proposals can be judged

effectively by lesser skilled staff (in policy) who are not civil servants, for example those employed by a scheme contractor.

This strategy was employed in running the Consultancy Initiatives, where the applications for consultancy grants from SMEs were appraised by the Enterprise Counselors. An Enterprise Counselor would visit an applicant firm and undertake a business review, to determine the nature of the consultancy required. The counsellors were not civil servants, but people recruited from commerce and retained for their business skills. The author observes that in this case there was an additional consideration in not employing civil servants. In general, civil servants do not have in-depth business experience, and would, therefore, not have been suitably qualified to undertake the review task. (Further information on the processing of project applications in CI is contained in appendix F, section F.8, pp. 101-102).

As described above, in the MPI programme the scheme contractor had responsibility for the appraisal of project applications. Applications were forwarded by the applicant firms to the contractor, whose staff then appraised each proposal against the scheme's eligibility criteria (see appendix H, section H.5.1, p. 138). It may be of course that 'Appraisal' is simply not involved, as is normally the case in awareness or technology access programmes, where the act of participation by firms is itself not the subject of grant funding. An example is the Managing into the 90s (M90s) programme (see appendix G, sections G.5.1, p. 116, G.5.2, p. 117, and G.5.4, p. 117), where programme funding paid for events aimed at promoting best practice, rather than providing firms directly with financial support.

Another factor which allows delegation of appraisal to scheme contractors on consultancy programmes is the larger degree of consistency between projects. For example projects funded under CI were related by the common themes of marketing, design, and manufacturing etcetera. Consistency renders 'testing' of applications for conformance with policy to be a routine exercise, with contractors' staff supplied with scheme guidelines which detail the conditions to be met. An example lies with the MPI programme (see appendix H, section H.5.3.2, p. 139).

7.3 Monitoring in Programmes

Programme monitoring can be defined as the continuous tracking of performance to check that a programme is meeting its objectives, and introducing any necessary changes, whether to programme delivery or to programme objectives, in the event of problems being identified, (Guy 1998, pp. 15-23). The author takes the view that monitoring is, in reality, programme evaluation in 'real time'! Monitoring is undertaken at two levels, the monitoring of the performance of an overall programme, and the tracking of the individual projects included within that programme. The former is mainly the responsibility of officials to undertake, but project monitoring can be undertaken by both officials and the staff employed by contractors.

7.3.1 Programme Monitoring

The *Innovation Budget Guidelines* set out the arrangements for programme monitoring. They are listed as:

"*(i) facilitate the effective management of activities and,*

(ii) give early warning of any technical or financial problems which may arise,

(iii) ensure that funds will be used for intended purposes,

(iv) ensure that contractors are carrying out their functions correctly and effectively and to the required timetable,

v) *ensure that claims are made and paid on time*",

(DTI, 1999a, p. 41).

The author takes the view that only (ii), "*give early warning of any technical or financial problems which may arise*", fits with the generally accepted definition of programme monitoring (Guy, 1998, pp.

15-23). The remainder, it is argued, can be more appropriately placed under the category of 'General Administration', and this topic is discussed in section 7.4 below.

The *Innovation Budget Guidelines* (DTI, 1992, pp. 21-22, 1996a, pp. 42-43, 1999a, pp. 41-42) state the importance of regularly checking the progress of programmes against scheme objectives, and the author observes the policy is widely adopted elsewhere in advisory programmes. Wider adoption is indicated by the DTI *Finance Handbook* (DTI, 1996b, section 9.1, annex 9.1.B). The 'Handbook', in discussing programmes in general, refers to the need for monitoring in which progress is routinely checked against detailed milestones and objectives. Officials are advised in the *Innovation Budget Guidelines* to also undertake mid-term reviews of progress, which are quoted as normally being carried out by line management. In the author's experience, they are carried out by an independent evaluation team within the directorate which has responsibility for running the programme (see chapter 8, section 8.5).

Talking to colleagues, the timing of the reviews is a balance between allowing sufficient time to have elapsed for credible conclusions on performance to be drawn, while still leaving enough time for any recommended changes in programme delivery to bring about acceptable levels of improvement within the life of a programme. The 1999 edition of the *Innovation Budget Guidelines* agrees with this view, stating:

"*The timing of monitoring activities may depend on the amount of monitoring effort deemed appropriate but ideally should be from the outset as well as throughout the project/programme. This may be at agreed intervals but should be comprehensive enough for problems to be spotted before they happen and in time to take corrective action*",

(DTI, 1999a, p. 68).

For example in the Regional Supply Office (RSO) programme, a mid term review of the initiative was undertaken in 1999 by the performance and evaluation team within the Business Link directorate of

DTI, the directorate also being responsible for the operation of the RSOs. The RSO programme was not due for a second evaluation until the financial year 2000/2001. The aim of the review was to see how well the RSOs were adjusting to their revised remit, which placed emphasis on the development of strategic supply chains, in accordance with the recommendations of an earlier evaluation. In 1994, shortly after being launched, the Business Links were subjected to a 'process review' which looked at the early implementation of the network, to see what initial lessons could be learnt.

The 1999 version of the *Innovation Budget Guidelines* (DTI, 1999a, p. 41) refers the reader to supplementary guidance on monitoring prepared by DTI's Assessment Unit (AU), and called the *Continuous Monitoring Guidelines* (DTI, 1999b). These are accessible to all staff being placed on the department's intranet 'TEAM FORUM', latterly superseded by DTI's Mandrin intranet. The role of monitoring is explained as providing a more regular supply of information on the progress of DTI programmes for the programme manager and the Assessment Unit. The need to have an up to date view of programme performance in terms of the meeting of milestones and objectives is highlighted as the means by which programmes may be enhanced. The Continuous Monitoring Guide (DTI, 1999b) advises as to what should be included in a monitoring report. Reports should record any developments which have occurred since the programme was initially approved, such as the market not developing as expected, and any policy changes.

Officials are also advised that monitoring reports (including mid-term reviews) shall also record performance against targets. Programme objectives, it is pointed out, will vary according to the nature of the programme. For example, in programmes involving dissemination activities, target figures may be set for the number of events and attendees at these events. Officials are advised to show progress against these targets, highlighting any delays and remedial action which is required. If remedial action has already been taken, this is to be recorded in the monitoring report. To help in the assessment of performance in terms of VFM, programme expenditure against forecast spend should also be recorded.

A number of 'monitoring' case study examples are given, by way of helping officials understand what is required. Looking through these provides examples of the use of monitoring mechanisms. Principal mechanisms quoted are the use of post-fair questionnaires, as in the Trade Fairs Support Scheme, which recorded the value of export orders received and contracts made. A further example quoted is the use of surveys conducted at the beginning and end of a programme (the Biotechnology Means Business Programme), which looked at the percentage increase in firms awareness of the scheme. Finally numerous examples are given of the use of simple monitoring, for instance, tracking the progress of projects, and the numbers of events held.

The author considers the guidance provided is 'generic' to both R & T and advisory schemes, and has been demonstrated by the deployment of 'continuous monitoring' in the latter type of programme. For example, in the Business Link initiative, officials implemented the 'Mystery Caller' assessment, in which Business Links were contacted with bogus enquiries to measure how well they handled and answered client questions. Regular reports are prepared of the results of these surveys. In the former Enterprise Initiative, the performance of the Initiative's advertising campaign was assessed by regularly measuring the levels of awareness of the Initiative in SMEs (see appendix D, section D.5, pp. 79-80).

An example of a strategy adopted for 'Monitoring' can be seen from examination of the M90s programme. Contractors employed on the programme were asked to give attendees of awareness events exit questionnaires. These asked people to indicate if they valued seminarial content, and whether they would take any resultant action. Through analysis of such data, officials were able to work with contractors in the tuning of programme content (see appendix G, section G.5.5, p. 118).

In the technology access programme SUPERNET, the University of Brighton was commissioned by the scheme contractor, PERA International, to track the operation of the initiative and evaluate its performance. Responsibility for the evaluation project was assigned to Professor John Bessant, at the University (Bessant, 1999). Following Bessant's confirmation to DTI of the independent status of his

work, officials reached an agreement with the University for evaluatory findings to be used directly by DTI. The first evaluation report (Bessant, 1995pp. 2-11) which reviewed the first and pilot year of operation, made several recommendations for improving the programme. Inspection of file papers reveals evidence of follow up action being taken. Bessant discussed his findings with the Grade 7 in DTI's Technology and Innovation Policy (TI) Division, who was responsible for DTI's internal evaluation of SUPERNET. Because of the independent status assigned to the University of Brighton's work, the DTI evaluators were able to incorporate Bessant's findings into their own report of the 'pilot' without further verification.

Following the drafting of TI's evaluation paper, officials responsible for SUPERNET went to the Innovation IPC for approval to fund the main phase of the programme. The case discussed modifications to the operation of SUPERNET, in response to the conclusions of TI's evaluation. One of TI's recommendations was that of Bessant (Bessant, 1995, p. 3), that the communication process between users and members of SUPERNET be improved. The case for the second phase proposed the introduction of a flow chart to help explain the communication chain. Inspection of the files also shows officials held regular meetings with the Contractor to discuss progress of the programme. PERA also submitted written annual progress reports to DTI.

The Consultancy Initiatives (CI) provides another example of arrangements made in programme monitoring. The second part of the CI ROAME statement (ROAME 1988c, paragraph 3.1) describes the monitoring strategy for CI, and shows it to include the preparation of several regular and ad hoc reports. These comprised quarterly reports covering progress on the uptake of the initiatives, including details on the efficiency of the delivery process and progress against the specified quarterly targets. The requirement to outline trends and highlight policy issues was stated. Reporting also included monthly reports to the EI managers, which were to form the basis of monthly submissions to ministers. An annual report to the European Commission was also required as well as ad hoc reports and briefings on the Enterprise Initiative as a whole and analysis

for preparing answers to Parliamentary Questions. In conversations with Mr. Philip Sowden, who was responsible for operating the Manufacturing and Quality Initiatives at PERA International, he informed the author that he met regularly with DTI officials to discuss progress reporting (see appendix F, section F. 6, p. 101).

In the MPI programme quarterly reports recording progress were similarly prepared, and regular meetings held with the MPI scheme contractor to discuss the performance of the scheme (see appendix H, sections H.5.1, p. 138, and H.5.3.1, p. 139). In MPI, an independent Review Board also met regularly to discuss the performance of the initiative. The 'independent' status of the board allowed officials to defend themselves if criticised over actions taken to modify the design of the scheme. The board was viewed as effective in helping DTI and the scheme contractor in administering the programme. An example of the Review Board influencing the delivery of MPI was in removing the requirement for applicants to hire their consultants through competitive tendering, as they had insufficient skills to manage the process (see appendix H, section H.5.3.3, p. 139).

7.3.2 Monitoring of Projects

Who carries out the role of project monitoring largely depends on whether R&D is the subject of programme work, or alternatively whether the scheme is essentially advisory. The complexity of the policy issues associated with R&D programmes dictates that officials normally carry out project monitoring in this type of scheme [Interview 9]. However in advisory schemes, interpreting policy is relatively straight forward, and monitoring may be devolved to an external agency. Such agencies are the Enterprise Counsellors who were employed in operating the Consultancy Initiatives. As discussed with colleagues, the issues and arguments involved are similar to those for 'Appraisal' as discussed in section 7.2 above.

7.3.2.1 Project Monitoring in R&D Programmes

For R&D programmes it is worth expanding on what project monitoring entails. There is of course an element of 'plain' administration, for example, ensuring work is being kept within timescales. The purely administrative functions are discussed in section 7.4 below. Emphasis in the current context refers to the technical tracking of project work, to investigate problems which have been experienced. Officials discuss with participants strategies to overcome difficulties, including the revision of project and programme objectives in the light of research (DTI, 19921996a, 1999a) [Interview 9]. An example lies with the GICP projects. Officials provided flexibility in the interpretation of the original objectives to enable new areas of research that came to light after project work had started, to be exploited (see appendix E, section E.2.4, p. 86).

Chapter 3, section 3.3.1 and chapter 6, sections 6.3.5 and 6.3.6, showed how officials are required to state clearly the monitoring strategies in ROAME statements. In observing the process for R&D programmes, monitoring involves regular meetings with project participants to make sure that they are fulfilling their obligations, to check on the progress of work against targets, and to agree any changes in work specifications that are required in the light of research [Interview 9]. From his own experience of monitoring progress under the former Support For Innovation (SFI) scheme, the author suggests that progress meetings are normally held 'on site', where project work is being undertaken. Site visits help officials confirm progress through witnessing first hand what has been achieved. Under SFI he undertook monitoring visits on projects to develop Computer Aided Design (CAD) and production management systems. A further example lies with the British Constructional Steelwork Association (a trade association) who received funding to develop on behalf of their members, CAD software tools for application in the steel fabrication sector. In these examples, the majority of meetings to discuss progress were held on the applicants' sites, where the author was provided with direct evidence of how work was progressing.

Appendix E provides further examples of project monitoring. As indicated above, in GICP officials were responsible for monitoring the progress of projects hosted by the RTOs, (see appendix E, section E.2.4, p. 86). In SMART, DTI's regional office staff were responsible for monitoring project progress, (in the New Smart Scheme the work is currently undertaken by officials in the regional Government Offices). In this task they also undertook site visits, meeting the firms who had been awarded grants under the scheme, (see appendix E, section E.3.5, p. 90). The *Innovation Budget Guidelines* continue, informing officials that it is necessary for the Project Officer to record on file all contact with the applicant company/consortium, that is telephone calls, and visits to, and meetings with, the applicant. Guidance emphasises the requirement for an audit trail to justify the making of payments (DTI, 1999a, p. 67).

Finally, the author has observed from experience that in collaborative R&D projects, participants are required to elect a lead organisation, which is responsible for the overall management of project work and reporting to DTI. Within the lead body, a team leader will be appointed who is ultimately responsible for the project, and who acts as the department's first point of contact. Apart from it being good practice to have a single party looking after management responsibilities, for officials it saves time and effort as they can interact with projects through one rather than a number of participant organisations [Interview 9]. Guidance (DTI, 1999a, p. 247) reflects the need to appoint a lead body, referring to the collaboration framework involving a participant as the lead organisation, that "*coordinates the applications and is the sole recipient of the Consortium grant from the Department*".

7.3.2.2 Project Monitoring in Advisory Programmes

In advisory schemes, project monitoring is normally assigned to non civil servants. As discussed in sections 7.2 and 7.3.2 above, people engaged in administering consultancy projects are less concerned with interpreting policy. In making decisions relating to the eligibility of a project proposal for funding, they do not normally have to base their conclusions on how elements of a project relate to the specific market failures underpinning a programme's rationale. Similar arguments apply in project monitoring within consultancy schemes. People tasked with the role do not have to review progress in terms of meeting the

'higher level' programme objectives, which are concerned with measuring reductions in the perceived market failures. Rather monitoring of consultancy projects is simply concerned with ensuring that progress is on track to meet the project targets which were agreed at the time of awarding the grants. For example, in the Consultancy Initiatives (CI), the Enterprise Counsellors visited firms on the completion of their consultancy projects, in part to monitor the consultants' performance, but also that of CI overall (see chapter 6, sub-section 6.3.5.1, appendix F, section F.8, p. 103). In the MPI programme, project monitoring was assigned to the scheme contractor, Ricardo Hitec, whose personnel visited applicant firms to determine progress (appendix H, section H.5.1, p. 138).

7.4 General Administration

The DTI *Finance Handbook* (DTI, 1996b, annex 9.1.B) advises officials managing programmes, that monitoring of work is required to ensure that money is being spent for the purposes intended. Section 7.3.1, proposed that four monitoring activities described in guidance be more appropriately be classified under the heading of "General Administration" as follows:

"*(i) facilitate the effective management of activities and,*

(ii) ensure that funds will be used for intended purposes,

(iii) ensure that contractors are carrying out their functions correctly and effectively and to the required timetable,

(iv) ensure that claims are made and paid on time",

(DTI, 1999a, p. 41).

The tasks are self explanatory, and the author is able to confirm, from observing programme management within DTI, that these functions are undertaken as part of the monitoring process for both R & T and advisory programmes. However when analysed in detail, the author observes certain differences in approach between programmes involving R&D projects, and those for which the funding

of consultancy work is the principal subject. For example task (iv), associated with the payment of claims, is the responsibility of officials within R&D programmes, but is normally undertaken by the scheme contractors in consultancy programmes. Tasks (i) to (iii) form part of the management process in both R & T and advisory schemes, and, as suggested, are self explanatory. However for task (i), the title "facilitate effective management", whilst being a good 'catch-all', does not in the author's opinion relay what the process entails. Work undertaken in the management of programmes is now discussed.

Based on his observation of the administration process, the author observes that in R&D programmes, officials seek to ensure that participants are doing their best to progress work to the agreed timescales and costs (DTI, 1999a, p. 67). This, guidance argues, also allows the Project Officer to quickly become aware of problems so that remedial action can be taken, and, it is added, is further necessary to ensure public accountability. Officials will also make certain that, in collaborative projects, the lead organisation co-ordinates project work, liaises well with others, and submits grant claims within 'due dates'. Checks will additionally be made to ensure that participants keep accurate records of project progress and expenditure. With the latter, officials ensure that spend is kept within budget, and that funds have not been misappropriated. Guidance states that as a minimum, monitoring will involve the thorough checking of the claims for payment and related documentation (p. 67). Claims for payment must be accompanied by an independent accountant's certification, confirming that monies have been spent in accordance with the conditions of the grant offer (DTI, 1999a, p. 52). Much of the administrative tracking is undertaken as part of the monitoring process, in meetings with the parties concerned. Providing they are satisfied with overall progress of projects, officials then make payments against submitted grant claims in the case of R&D programmes. Sub-section 7.3.2.1 above provided some examples of monitoring in R&D projects.

In advisory schemes responsibility for project monitoring and payment of grants is normally devolved to contractors. Programme administration thus centres around overseeing the work of contractors, assessing their performance in fulfilling their contractual commitments. Again, officials will be seeking to ensure

spend remains within budget, and that programme targets are being met. Where administrative issues arise, officials will discuss with the contractor strategies for the resolution of problems. These issues are usually discussed during the regular monitoring visits to contractors, as discussed in section 7.3 above.

For example, inspection of documents held on file shows that for MPI (see appendix H, sections H.5.3 p. 139, and H.5.4, pp. 140-141) and SUPERNET, meetings with the respective contractors covered topics such as expenditure, the design and registration of programme logos, the design of programme literature, organisation of seminars, and the tracking of programme spend against forecast spend. The files also show how contractors are also required to prepare and submit to officials, reports recording progress and financial spend on the schemes which they manage. The Consultancy Initiatives ROAME statement (second part), (ROAME, 1988c), states as an objective for 'Monitoring', "*to assist the conduct of effective budget management and financial forecasting ... including actual and forecast expenditure and reference to regional indicative budgets*" (paragraph 1). The ROAME continues by specifying that monitoring will include "*'reporting' in the form of half yearly financial reports to the Budget Committee and ministers, accompanied with the relevant physical data and analysis*" (paragraph 3.1). Similarly in MPI, the scheme contractor provided the department with quarterly reports containing details of expenditure, and spend projections. As the official responsible, the author held regular progress meetings with the contractor, where these figures were also discussed, (see appendix H, sub-section H.5.3.1, p. 139). From his involvement in awareness programmes, that is M90s, the author observes the management procedures adopted to be essentially the same as those for consultancy schemes, (see appendix G, section G.5.3, p. 117).

7.5 Scheme Guidelines

In consultancy programmes, where contracts are awarded for the administration of projects, the scheme contractors become 'Agents of the Crown', that is, they act on behalf of the Secretary of State. Officials must therefore ensure that in administering programme activities, scheme contractors act in accordance with policy. The author observes that officials secure conformity to policy by issuing

contractors with 'Scheme Guidelines', which inform contractors of their responsibilities and how they must act in the administering role. Examples are the guidelines issued to the scheme contractors in the Consultancy Initiatives, and the MPI programme. Further instances are the issuing of guidelines to the Business Links, and to the organisations hosting a Regional Supply Office, to help ensure that the delivery of the Business Link and Regional Supply Office services are conformant with policy.

Inspection of guidelines drafted for consultancy schemes (and for example the Business Links), shows them to contain a series of policy statements advising people on how to act in given situations. The guidelines typically contain details of the project eligibility criteria (checklists), programme objectives, the range of work to be included in projects, listing and de-listing of advisors, the procedures for paying grants and the monitoring of grant expenditure.

7.6 Appointment of Programme Contractors

Being seen to be fair beyond question is paramount in appointing contractors. The DTI *Innovation Budget Guidelines* state:

"*a prime tenet of Government policy (and which is enshrined in Government Accounting) is that goods and services should be acquired by competition unless there are convincing reasons to the contrary. Competition avoids any suggestion of favoritism and the encouragement of monopoly*",

(DTI 1999a, p.61).

The guidelines continue by informing officials that under normal circumstances they must adopt competitive tendering procedures for the procurement of goods and services. The hiring of scheme contractors and consultants to carry out research falls into the latter category. Guidance also advises that VFM should be the primary aim in assessing bids to supply government.

7.6.1 Competitive Tendering

The author has participated in competitive tendering on numerous occasions, and has observed the process to function by 'testing the market'. Testing the market involves inviting costed proposals from several suppliers of services. Officials compare and select from the submissions received, that bid which represents best value for money. The features which have been built into the competitive process are now examined. In studying the tendering process, the author in particular drew on his experience of being directly involved in the competitive tendering for the appointment of the scheme contractor for MPI (appendix H, section H.5.1, p. 138), the agency to operate the SUPERNET programme, and the communications company to run the Management Action Briefing seminars in the M90s programme (appendix G, section G.5.3, p. 117).

The *Innovation Budget Guidelines* DTI (1996a, pp. 76-79, 1999a, pp. 61-66) describe the process of Competitive Tendering, which comprises several stages. The first involves the drafting of an Invitation To Tender (ITT) specification, which describes the scope of the work to be undertaken, giving detailed, clear and specific objectives. Topics presented in ITTs include a full description of the work to be undertaken, required timescales, and the reporting procedures.

The award of a contract often makes the successful organisation a representative of the department. Often, the successful bidder's proposal becomes the main source of reference in the contract documentation. Care is therefore taken in drafting the ITT, to give clear directives as to how contractors must behave to avoid 'embarrassing' the Secretary of State. Tender specifications usually quote the ROAME objectives and programme eligibility criteria, as a first step in ensuring work is undertaken in accordance with policy.

The author observes that officials write non-prescriptive ITT specifications which do not assume a preconceived approach. This forces bidders to analyse project requirements for themselves, ensuring that they have to gain a good understanding of the requirement. Those who fail to analyse what is involved usually present sketchy proposals which can be rejected in shortlisting. Being non-prescriptive allows

bidders the freedom to be innovative in their proposals, and usually leads to a variety of approaches being suggested. VFM is therefore enhanced by having a greater range of options from which to choose. Typically six organisations are invited to submit written proposals for how they would tackle the tasks specified in an ITT. Proposals submitted by tenderers are usually submitted to two stages of evaluation, 'shortlisting' and 'award of contract'.

Following the mailing out of the ITT, officials identify a tender evaluation panel. Membership of the panels comprises those staff who will have direct responsibility for management of the contract when awarded, together with officials drawn from other parts of the department who have specialist knowledge relevant to the project work. Panels are selected such that the combined knowledge of members fully qualifies them to appreciate the content of the proposals, and the fitness of bidders to meet requirements. In evaluating bids, guidance advises officials to make judgements in areas such as tenderers' understanding of the requirement, aptness and originality, previous relevant experience, capability in terms of resources, caliber of staff in terms of their qualifications to resource project work, management ability, and costs.

The guidelines (DTI, 1996a,, pp. 76-79, 1999a, pp. 61-65) advises officials to seek effective relationships with contractors and to conduct tender evaluations to maximise VFM. Discussions with potential contractors both before and after opening tender documents is advised. In the first instance the author agrees. He has held many meetings with potential contractors prior to the tender submission date. These meetings, always at the request of the bidders themselves, provide their project staff with the opportunity to question officials about the department's requirements, thereby gaining a better understanding of 'the need', which in turn leads to the submission of better proposals. With the latter, that is holding discussions with bidders following the opening of the tender documents, the author completely disagrees. He and those he has observed have never conducted discussions with bidders once the tender deadline has passed. To do so, in his opinion, might give firms providing information after the deadline an unfair advantage

over their competitors. On occasions the author has, however, observed that it is sometimes necessary to contact a tenderer, where an ambiguity in their proposal needs clarification.

On receipt of the tenders, panel members are called to a shortlisting meeting where the proposals received are initially evaluated. A collective decision is reached as to which candidates will be invited to a tender evaluation interview. Problems with the shortlisted bids are discussed, and agreement reached about exactly which parts of each proposal will require clarification when the bidder is questioned. Shortlisting makes the tender review process more efficient by weeding out the non-starters at early stage, preventing further waste of their time, and allowing officials to concentrate on examining the better proposals. Shortlisted candidates are invited for interview by the tender evaluation panel. The aim of the tender evaluation interviews is to subject each shortlisted proposal to close examination. Panel members pose specific questions (some will be the questions from the shortlisting meeting) about the proposals, asking tenderers to clarify points which they have made or provide missing information. They also probe the knowledge of the team members fielded to check it is sufficiently wide and deep to resource the project work. The interviews also provide tenderers with the opportunity to expand on their written proposals.

Officials always insist that tenderers present for interview, those members of their project teams who have been assigned direct responsibilities for the day-to-day management of contract work. This prevents the tenderer fielding top people who create a good impression at interview, but using less experienced staff in the project team after the contract is awarded, thus prejudicing the project's success. After the interviews, panel members discuss the performance of the tenderers, and reach a collective decision about which organisation should be awarded the contract. The author observes that frequently the views on what represents the best bid will change following an interview. He suggests that the importance of interviewing cannot be over stressed. The successful bidder is then awarded the contract and told that he may start work.

Through the tender evaluation process, officials aim to select an organisation which represents an optimum proposition in terms of their ability to deliver project objectives at minimum cost. However, it must be clearly stated that the department does not subscribe to a 'cheapest is best' policy in the selection process. Indeed in the author's experience, the cheapest bid seldom wins. Emphasis is always placed on the likelihood of meeting departmental objectives. The main points on which selection is based include the number of man-days offered, the amount of relevant experience held by the proposed members of the project team, price, and the credibility of the approaches to be employed in project work in terms of the probability of them securing successful outcomes. In the author's experience, officials will also investigate how far up the learning curve bidders are, in terms of their ability to make progress quickly. Tenderers who have researched the project issues well, and have made initial suggestions as to how they should be tackled in putting their proposals together, are more likely to 'hit the ground running' and represent better VFM than those who have not.

Finally it is interesting to note that officials cannot agree as to whether an indication of the budget available for contract spend should be given at the time of going out to tender. Some officials say that to give an indicatory price stifles innovation on the part of tenderers, with bids tending to come in at close to the budget figure. The author observes that this does indeed happen, but where an indication of budgets is not given, proposals are often received which are 'way over the top' in terms of what is affordable. Based on his experience, the author holds the view that it is better to give a 'ball park figure' for the financial size of a project, and then make judgements on the basis of who offers the best value. Again in his experience where ball park figures have been given, whilst the spread of quoted costs is more restricted, great variations are still experienced in the content of the proposals received, indicating that innovativeness is not prejudiced.

7.6.2 Grants versus Contracts

Guidance DTI (1996a, pp. 64-70, 1999a, pp. 53-60) draws a clear distinction between 'Offers of Grants' and 'Contracts'. The difference between grants and contracts hinges around the type of

relationship which should exist between the department and the organisation which is going to undertake the work. Grants are used where an organisation or organisations "*undertake work for the benefit of the bodies concerned, and which in turn will be seen to the benefit of UK industry as a whole*" (DTI, 1996a, p. 64). Grants may be regarded as DTI contributions, that is gifts, to the funding of approved activities (DTI, 1999a, p. 54). Guidance (DTI, 1999a, p. 53) refers to DTI traditionally funding science and technology projects through offers of grant, for example in collaborative R&D projects. However, meeting the criterion that work shall benefit industry as a whole is in the author's opinion not readily applied in consultancy projects. In these cases, the wider benefits are realised as benefits to the UK economy as a whole, through the improved competitiveness of firms.

Offers of grants are made in the form of 'Offer Letters', which are issued to the lead organisation. Guidance (DTI, 1992, p. 43, 1996a, p. 64), reminds officials that in issuing offer letters, they are acting on behalf of the Secretary of State and not industry. Thus grant offers are always discretionary, allowing the department to withdraw funding in the event of applicants not carrying out work to the best of their abilities. Examples given in guidance of grant situations are in Technology Access programmes where a contractor will run seminars to disseminate technical knowledge on behalf of DTI (DTI, 1999a, p. 54). Other examples of grants being awarded to organisations and firms to fund technology related projects lie with the GICP programme (see appendix E, section E.2, pp. 84-85), SMART (see appendix E, section E.3.4, p. 89), and SPUR (see appendix E, section E.4.3, p. 93). The author is also able to confirm from his experience, that the SFI projects described in sub-section 7.3.2.1 above, were similarly grant funded. Trade associations are also supported to help promote good practice. The Society of Motor Manufacturers and Traders Limited (SMMT) are supported by DTI to administer the SMMT Industry Forum, which aims to enhance the competitiveness of the UK components industry (see websites www.smmt.co.uk and www.autoindustry.co.uk).

In contrast to the offer of grants, contracts are where DTI enters legal relationships with organisations which carry out work for the department (DTI, 1999a, p. 53). As indicated in sections 7.2, 7.3 and 7.4

above, contracts are let for the running of consultancy programmes. For instance in the Consultancy Initiatives, PERA (an RTO) operated the Manufacturing and Quality initiatives, responsibility for the latter being shared with Salford University. The Charted Institute of Marketing administered the Marketing Initiative, 3i Enterprise Support Limited the Business Planning and Financial Information components, and the Design Council the Design Initiative (see appendix F, section F.8, p. 101).

Consultants have also been commissioned to undertake research to establish market failures, and to help inform the design of delivery strategies. A consultancy ISTEL were commissioned to review the international status of the development of manufacturing technologies, and those that could be adopted by UK SMEs [Interview11]. In the M90s programme, PA Consulting were awarded a contract to identify best practice in developing a company's business strategy in the context of the market drivers (see appendix G, sections G.2.3.1, p. 110, and G.2.4.2, pp. 112-113). In MPI, PERA were commissioned to provide a report comparing the performance of firms that had adopted a strategic approach to the implementation of Advanced Manufacturing Technology, compared with those who had not (appendix H, section H.2.4.2, p. 130). External organisations including consultants are also employed to undertake programme evaluation, and monitoring. Pieda were employed to undertake the evaluation of the Regional Supply Offices (Pieda, 1997), and Segal Quince Wicksteed (SQW) Limited for the evaluation of CI (SQW, 1992), (appendix F, section F.11, p. 104-105). St. John's Innovation Centre (St. John's, 1992) undertook monitoring of programme performance in M90s (see appendix G, section G.5.5, p. 118).

Inspection of file papers provides an example of professional institutions being involved in the process of developing programmes. The former Institution of Production Engineers received a grant to conduct a feasibility study into the needs for an initiative to assist manufacturing SMEs, through continuing education and training, and awareness activities.

7.7 Promote Programme

The observations described below are based on the author's involvement in the launch of MPI, SUPERNET, and obtaining ministerial attendance at the M90s Management Action Briefing seminars. Good publicity at the time of programme launch helps secure high participation by firms in a scheme. In the author's experience the issuing of 'press notices' (sometimes referred to as press releases) is the 'bulk standard' means of informing the 'media' of the launch of activities, and is used for both routine as well as high profile announcements. In a project meeting with a colleague (Andy Towers) in DTI's former Press Office, the author was advised that press notices are 'faxed or e-mailed' to editors in the National Press, professional journals, Radio and Television. Inspection of press releases shows that they are kept short in order that they may be read quickly, containing sufficient detail on which to base a short but interesting article. Staff writing press notices work very closely with officials responsible for launching new schemes, to ensure that the salient points relating to the operation and aims of a programme are conveyed in the 'notices'.

For more important initiatives, launch events involving ministers are mounted to secure high levels of publicity. The DTI *Finance Handbook* suggests people consider an official launch of programmes, for example at receptions involving the appropriate minister (DTI, 1996b, section 9.1). The author observes that greater exposure in the media arises from several factors. To begin with, holding an event provides an opportunity to invite journalists to attend and witness 'the launch', thereby raising the probability of editorial coverage. File papers show that a press launch was mounted in the case of the MPI programme, and was successful in securing wide editorial coverage (see appendix H, section H.5.4, p. 140). Before inviting the media, officials liaise with their colleagues in the ministers' private offices to secure the agreement of a minister to open the launch event. Requests to ministers to attend events are set out in formal ministerial submissions. In attempting to secure ministerial involvement, officials will usually

first try and obtain agreement from the minister having direct responsibility for the programme in question.

Whether the Secretary of State or a junior minister is first approached will depend on the relative importance, in political terms, of the scheme. Ministers have heavy commitments arising from their ministerial duties, and sometimes suitable diary dates for a minister to attend cannot be found. In these circumstances other ministers responsible for related areas will be approached. Ministerial attendance at a programme launch is very important, as it conveys the high profile nature of a scheme. A high profile attracts attendance, thereby greatly increasing representation by the media and their willingness to report on a scheme's launch and its aims.

The author further observes that ministers normally launch programmes in a formal speech at the launch event. The speech explains why the scheme is being introduced, and sets out the government's aims and how these will be achieved. Following the presentation, an opportunity is given for the Minister to be interviewed by journalists. Working through staff in the ministers' private offices, officials prepare briefing notes for ministers, including questions and answers briefs, and normally draft his or her speech, the text of which is given to the media at the event. In this process officials ensure that the media receives the desired messages relating to the programme. For example in SPUR, a submission dated 29 January 1991 to the SoS from a section head in DTI's RTP Division, recommends that he launch the programme at a 'press launch', and agrees the accompanying draft press notice. Also attached are the draft 'opening remarks', and a question and answer briefing.

A submission to the Secretary of State (SoS) (Peter Lilley) dated 18 February 1991, refers to the SoS agreeing to a formal launch of MPI. Attached to the covering minute of the submission were the draft press notice, the main points for his opening remarks, and a 'question and answer' briefing. The SoS is asked if he is 'content' with these. The press release gave the reasons for introducing the programme and outlined the operational details. Numerous articles appeared in trade journals (copies held on the

MPI Launch File), which served to help promote the programme (see appendix H, section H.5.4, p. 140).

A new scheme to help industry always provides ministers with a good news story to relate. However inspection of file papers for the SUPERNET programme shows how a launch event also provides ministers with opportunities to discuss successes elsewhere, and in so doing promote other programmes. At the SUPERNET launch, the Rt. Hon. Michael Heseltine took the opportunity to update those present with progress on developing the network of Business Links, and remind people of the initiative and why Business Links were important.

From his experience in launching the MPI programme, SUPERNET, and the Management Action Briefing seminars within the M90s' programme, the author concludes that securing 'press' attendance and ministerial involvement at launch events is a 'chicken and egg' scenario. The press is less likely to attend if there is no minister present. Conversely, ministers are attracted by photo opportunities, and are more likely to agree to launch a scheme if media coverage will be good. Officials attempt to break the circle by convincing the minister of the importance of the scheme in benefiting the Economy.

The author observes that the process is eased if ministers are made aware of the benefits at an early stage, as part of seeking their approval for funding. Once convinced, the Minister is likely to become enthusiastic and agree to attend the launch event. Agreement obtained, the Press is told of the Minister's intentions, motivating them to attend. The word 'intentions' is employed because ministers can be summoned at short notice to attend urgent debates in 'The House'. Where the participation of bodies such as trade and research associations is germane to the running of schemes, their representatives at CEO level are invited to launch events. This was the case with SUPERNET.

For R&D programmes, participation in scheme work may be enhanced by holding programme seminars. Potential participants are invited to the seminars where the operation and objectives of programmes are set out, the benefits to the community explained, and an opportunity for officials to be questioned about programme details provided [Interview 11]. A high public profile helps secure success for a programme. This has been achieved through mounting national advertising campaigns, as was the case for the Enterprise Initiative (see appendix D, section D.4, p. 79) and for the Business Link Initiative. In the MPI programme, the scheme contractor was responsible for promoting the scheme. The contractor mailed out to target companies with a brochure explaining the role of MPI and describing the grants available. Consultants were also informed of the programme's details. Exposure for MPI was also obtained through articles written in trade journals, and promotional seminars were run in collaboration with DTI's Regional Offices. Consultancy organisations participating in the programme also helped to promote MPI, motivated by the market opportunities which the programme created for them (see appendix H, section H.5.4, p. 141). Appendix G, section G.5.3, p. 117, shows how contractors were responsible for promoting M90s activities, including the running of seminars and the preparation of brochures.

7.8 Close Programme

Programmes have a finite life, and ultimately will be closed. As an official responsible for operating programmes, the author has been made aware by senior staff that there is often a legal requirement for a public announcement of their closure. Giving notice of closure is particularly important for grant based programmes. If a firm applies for funding under a suspended scheme, and the public has not been formally notified, the company can argue in Court that the programme is still officially open, and its application should be considered. Complaints over non-disclosure may be submitted to Members of Parliament (MPs), and ministers: complaints may seriously embarrass ministers and departmental staff, and cost considerable official effort drafting suitable responses.

When asked to affect closure of the MPI programme, the author sought advice from DTI's solicitors. He was advised that notice of programme closure can be formally announced at the public launch of a programme and, if appropriate, contained in the promotional literature. The limit may be presented in the form of a specific date of closure, or as a target number of grants to be awarded after which no further applications will be considered.

However as was the case with MPI, it is not always convenient to announce when a programme will close at its launch. Market failures may be protracted, and it can be desirable to leave open the option to introduce follow-on phases of the programme. In such cases the author was advised that an 'arranged' or 'planted' 'Written Parliamentary Question' be used as the mechanism to give public notice of closure. An MP 'friendly' towards the government of the day is asked to put down a Written Parliamentary Question in the House of Commons. The Minister then responds in writing to the MP, giving the date of closure. The Minister's answer, when published in Hansard, constitutes the public notice of closure. This approach was adopted for announcing the closure of MPI, (Hansard, Session 1992-93, 29 March-16 April 1993, pp. 51-52) and, the author was told by a colleague, also in the case of the Consultancy Initiatives.

Interestingly, in the case of MPI, the author's branch head had received similar advice to that of the author. In a minute dated 8 March 1993, the branch head writes to the head of DTI's former Research and Technology Policy (RTP) division, referring to a previous conversation with him in which the division head had agreed that closure of MPI should be officially notified through a 'planted' Parliamentary Question (PQ) and a written answer. Attached to the minute were drafts of the PQ and answer. The author observes that the 'arranged question' should not seek information relating to closure directly; it should avoid drawing attention to scheme withdrawal as that could provoke criticism. The question should seek general information

about the programme, allowing the notice of closure to be given as a 'throw away line' at the end. For example in MPI the question placed was along the lines of "How many applications have been received on the scheme to date"? The written answer, drafted by officials, gave the number of applications received, and added that no further applications would be processed beyond a specified date.

7.9 Inputs

The primary input to the 'Implementation' process is the approved programme ROAME statement, and is the fundamental source of reference for the administration of schemes (DTI, 1996a, p. 32, 1996b, section 9.1, and annex 9.1.B, 1999a, p. 27). The ROAME, which details how a programme will operate and the objectives set, is used as the basis in the drafting of Invitations to Tender, scheme guidelines, publicity material, and other similar material.

Other documents which represent inputs to the administration function are proposals submitted by applicants seeking grant funding of project work, and those tendered by contractors in response to ITTs. Progress reports received from grant recipients and contractors also input information to the administrative process.

7.10 Outputs

A principal output is launched programmes. However as can be seen through examination of the tasks undertaken in operating schemes, the process overall generates a variety of outputs. For example in R&D programmes, the outputs could be research reports, pre-production prototypes or product development specifications. In programmes for which supported consultancy is the principal objective, outputs are represented by consultants reports containing plans for the implementation of change. Other important outcomes are progress and

monitoring reports which form 'inputs' to 'Evaluation' (DTI, 1999a, p. 41), and contracts issued as a result of competitive tendering.

Further detail on the approaches adopted in 'Programme Implementation' can be obtained through reading the case study examples detailed in appendix D, sections D.4, p. 79 and D5, pp. 79-80, appendix E, sections E.2.3, p. 86, E.2.4, p. 86, E.3.4, p. 89, E.3.5, p. 90, E.4.3, p. 93, E.4.4, p. 94), appendix F, sections F.4, pp. 98-99, F.6, pp. 100-101, F.8, pp. 101-103, F.9, pp. 103-104, and F10, p.104, appendix G, sections G.5, pp. 115-118, G6, p. 118, and G8, 119-126, and appendix H sections H.3, p. 132, and H.5, pp. 138-141.

Figure 7.1 below shows the IDEF Level 2 diagram, describing the component process of 'Programme Implementation'.

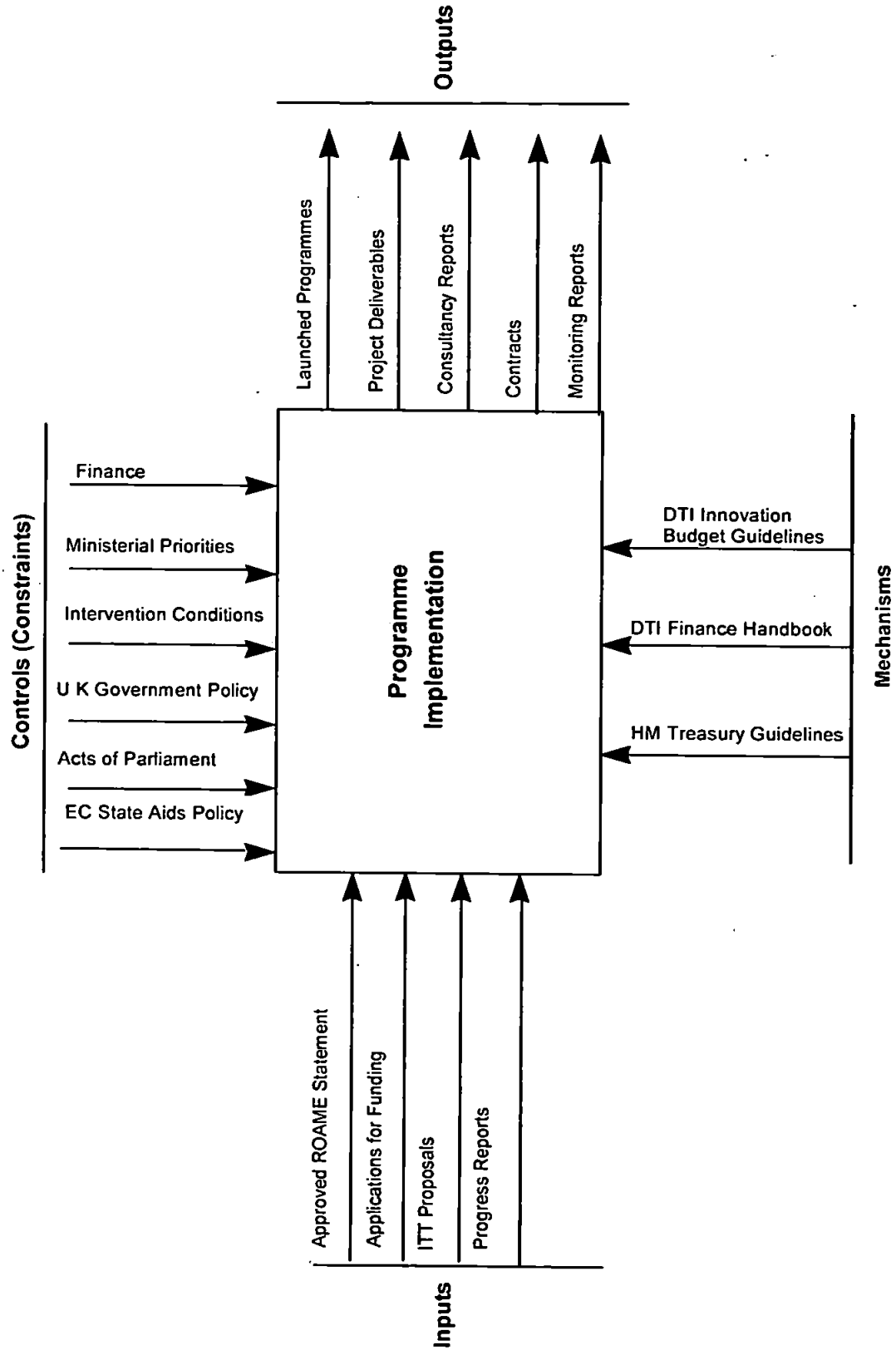

Figure 7.1 IDEF0 Level 2 Diagram for Programme Implementation

7.11 Conclusions

The component process of 'Programme Implementation' has been mapped and an IDEF0 Level 2 diagram developed, which graphically describes the process. It is therefore concluded that the second part of the fourth research question has been responded to. The question may be put as:

b) "What are the mechanisms involved in the task of 'Programme Implementation'"?

Analysis has revealed that the implementation of programmes comprises the following elements:

- Appraisal of projects;
- Monitoring of programmes and projects within programmes;
- General Administration;
- Promoting Programmes including their launch;
- Scheme Closure.

In analysing these roles it was observed that there are significant differences in approach between R & T and advisory programmes, particularly in the areas of appraising projects, monitoring of project work, and in programme administration. It is observed that in advisory programmes, particularly those for which consultancy is the primary focus of funding, project appraisal and monitoring is undertaken by external agencies. In contrast, with R & T programmes, and for which R&D is the principal activity, project appraisal and monitoring is undertaken by officials. It is proposed that these differences stem in the first instance from the drive to place work outside the civil service, to help reduce the drain on the running costs budget. In operating advisory programmes, it is proposed that it is the absence of a need to interpret the complex issues surrounding market failure, which enables officials to contract external organisations to administer these schemes. However in R&D programmes, the policy criteria are considered too complex to allow the task to be devolved to external bodies. It is also observed that the

issuing of legal contracts and guidelines to external agencies, provides the basis by which officials can ensure that they behave in a manner which is acceptable to the SoS.

Study of project appraisal, monitoring, and administration, has provided further examples of the organisations involved in DTI's programme network, and their roles in the process of designing and operating schemes. Research has revealed the involvement of trade associations and the professional institutions, serving to further demonstrate the wide range of organisations that form part of the programme network. Importantly it is noted that programme design continues into the stage of programme implementation. Section 7.6.1 showed how by being non prescriptive in writing ITT specifications, officials could choose from a number of innovative proposals. Thus, in developing their tender proposals, contractors help shape the final design of schemes.

Section 7.3.1 illustrates how programme designs can be 'tuned' during their operation, through the process of scheme monitoring. Finally, examination of the mechanisms employed in programme implementation, shows that officials continue to work towards maximising VFM. Project appraisal, programme and project monitoring, and the tendering processes, each work to help ensure value is maximised. The next chapter, chapter 8, analyses the process component of 'Evaluation and Feedback', and also brings together the results of the research conducted in this and earlier chapters, to construct an IDEF0 diagram describing the overall structure of the design and administration process.

CHAPTER 8

EVALUATION AND FEEDBACK

8. EVALUATION AND FEEDBACK

8.1 Introduction

This chapter describes the completion of the exercise of mapping the process of designing and administering support programmes. Chapter 5 began the task of mapping with the development of a top level IDEF0 diagram, providing a description of the overall support process. Chapter 3, section 3.3, had revealed the overall process to comprise the process components 'Issue Identification'; 'Implementation', and 'Evaluation and Feedback'. Chapters 6 and 7 respectively mapped the mechanisms involved in the first two of these components, and this chapter concludes the mapping exercise by investigating the procedures adopted in the final component of 'Evaluation and Feedback'.

It is important to look at evaluation more closely. Chapter 3, section 3.5 highlighted the strategic nature of 'Evaluation and Feedback' in designing support policy. Therefore it is necessary to investigate the mechanics of the process as part of obtaining a complete, detailed description of the total design system. It is important to study 'Evaluation' as the function adds value to the learning process, by feeding back the lessons learnt in programme delivery into future decision making.

Section 3.3 found 'Evaluation' to be a routine practice amongst governments in the developed world. From his knowledge of the design process the author is aware that DTI is no exception. Indeed evidence shows how the government was acknowledging the importance of evaluating programmes in terms of their final effectiveness in 1981 (HMSO, 1981). As indicated in chapter 1, section 1.2, large numbers of programme evaluations have been undertaken by DTI. In reading the literature the author also became aware of the substantial debate which has taken place amongst researchers on the subject of 'Evaluation'. The author felt that investigation of the structures installed in DTI might also be of interest to researchers generally.

Thus, chapter 3, section 3.8.3, in support of completing a response to the fourth research question which was aimed at obtaining a complete description of the design process, posed the final supplementary problem of:

(c) "'Evaluation including Feedback', what are the procedures adopted in evaluating programmes and feeding back evaluation results to the design process"?

8.2 The Need for Evaluation and Feedback

The HM Treasury 'Green Book' (HMT, 1997) sets out the requirement for the Whitehall departments to evaluate their interventions, and feed back the findings into the process of policy design. The 'Green Book' describes 'Evaluation' as examining the 'outturn' of a project, programme or policy. Evaluation is seen as adding value by providing "*lessons from experience to help future project management or development of a specific policy*" (HMT, 1997, p. 12). The *Innovation Budget Guidelines* (DTI, 1999a), in discussing 'Evaluation', refers officials to detailed advice provided in the supplementary guidelines, *Guidance on the Preparation of Evaluation Plans* (DTI, 1999c). These guidelines are designed to help evaluators and programme managers in preparing evaluation plans, with access to all staff provided by the guidelines being placed on the DTI 'Mandarin Intranet'.

The evaluation guidelines again set out why evaluation of programmes is necessary. The guidelines acknowledge that there are several reasons for evaluation, but suggests "*they all boil down to ensuring that programmes remain relevant, and that they provide a cost effective way of meeting their prescribed objectives*" (DTI, 1999a, p. 1). The guidelines continue that whilst "*Evaluation is essentially a backward looking process, its purpose is to inform future decisions and hence help policy makers achieve their aims*" (p. 1). This latter observation of 'Evaluation' as being part of a learning process, chimes in with the views of others as discussed in chapter 3, section 3.5. For example, Weiss (1972, p. 4), and Guy (1998, p. 1) highlight the purpose of evaluation as being to measure the effects of programmes against their objectives, as a way of contributing to subsequent decision making relating

to current and future programmes. Knox and McAlister (1995, p. 413) point to policy evaluation as integral part of the public policy process, and refer to 'Evaluation' as a core managerial activity. Fernández-Ballesteros (1992, p. 205) considers 'Evaluation' as being pivotal in the design process, as the feedback of results provides a system of self correction and improvement of policy.

8.3 Evaluation Planning and Implementation

The Treasury 'Green Book' (HMT, 1997, pp. 12-14) advises that the activity to be evaluated must be clearly specified. Evaluation must be directly related to the policy, management, and objectives of the department (or agency). The need for the original documents proposing activities (programme ROAMEs) to describe clearly the programme rationale, aims, and objectives is emphasised. This then, is the starting point in evaluation planning.

Treasury guidance also advises that any changes in goals be recorded (p. 12). The need in drafting cases for support, for objectives to be precisely defined and quantified is highlighted, as is the need to take account of monitoring information. The author observes that this advice on evaluation planning is conveyed in the *Innovation Budget Guidelines* (see chapter 6, section 6.3.4). The DTI *Finance Handbook* (DTI, 1996b, section 3.4) develops the Treasury's theme, stating that 'Evaluation' involves testing the validity of programme rationale, assessing how far programme objectives have been met, estimating the economic benefits both direct and indirect (the wider benefits), and establishing the efficiency and effectiveness of an intervention. The *Evaluation Plan Guidelines* (DTI, 1999c, pp. 1-4) continue, advising programme managers that they must draw up evaluation plans, and setting out the issues which should be covered in a plan. These are described as follows:

- Testing the Validity of the Rationale: guidance states that the evaluation plan should set out the rationale issues to be addressed by evaluation research in the form of hypotheses to be tested, and specify the testing methodology to be adopted. The aims include confirming the evidence of market failure, establishing the extent to which interventions have influenced target organisations,

analysis of how the market is developing and, if market failure is still present whether the delivery strategy remains valid.

- Measurement of Benefits: analysis of the benefits which have arisen through the introduction of a programme. The plan must detail the principal benefits to be assessed and the key performance indicators. Officials are required to detail the strategy for collecting the evidence of benefits.

- Cost Effectiveness: Officials are advised that they must consider whether the programme is providing VFM, by comparing programme costs with the benefits accruing.

- Appropriateness of Institutional Arrangements: officials are advised that evaluation plans should describe how the various agencies which might be involved in programme delivery, enhance the effectiveness of programmes in which they participate.

- Programme Specific Issues: officials are advised that there are always programme specific issues which need to be considered in drawing up evaluation plans. For example there can be uncertainty over the impact on beneficiaries of a programme, or those external to a scheme. Uncertainty may arise from the design of a programme and review of the delivery strategy should be considered. Or for example how a scheme relates to other interventions in the same market sector may require investigation, to ensure that the separate interventions are mutually supportive.

Choice of evaluation methodology is discussed (DTI, 1999c, pp. 4-5). Officials are advised that development of research strategies hinges around asking who is best placed to answer the evaluation questions. The balance between the use of 'in-house' and external consultancy must also be decided. Choice of research methods must also be considered, and the following examples are given as the usual methods employed:

- Literature search: survey of current academic and empirical literature provides insights into how a market works, and can be useful in providing evidence supporting continued rationale for intervention (see chapter 5, section 5.3.2 and chapter 6, sub-section 6.2.3.2),

- Survey of beneficiaries: use of detailed questionnaires in postal or telephone surveys to investigate evaluation issues. Officials are advised that whilst this work may be undertaken 'in house', larger surveys will normally be conducted by external, professional survey organisations.

- Interviews with scheme participants: These include the interviewing of programme beneficiaries and organisations responsible for scheme delivery. Officials are advised that such interviews will normally be conducted 'face to face'.

Officials are additionally advised that in drawing up evaluation strategies, account should be taken of relevant experience in other countries.

Finally the *Evaluation Plan Guidelines* (DTI, 1999c, pp. 5-6) provide advice on how approval to conduct an evaluation is obtained, and the drawing up of evaluation timetables is discussed. Under the heading of "Outputs and Timing" officials are advised that the "*evaluation plan must clearly state what the deliverables are*" (p. 5). These, guidance advises, will usually consist of an evaluation report, and a payment schedule for any contractor's costs. A project timetable is also required for the evaluation, showing the procurement, research and final reporting stages. Allowance must also be given for the attainment of ministerial approval for any external consultancy exceeding £10,000. The Secretary of State's approval is required for consultancy spend over £40,000, and approval from the appropriate minister for contracts of between £10,000 and £39,999. The requirement for draft plans to go before the IPC and EMG must also be taken into account in planning.

Once an evaluation plan has been agreed, a research specification is then drawn up as the basis for going out to tender. The specification will build on the evaluation plan and include any additional detail required by a contractor, but omitting information contained in the plan for internal purposes. In talking to colleagues concerned with evaluation, the author was advised that the timing of an evaluation study is set by the need for findings to inform the policy development process, but sufficient time must be allowed to elapse for the results to be meaningful. The author observes that other researchers support this view (Rothwell and Zegveld, 1981). The author has found that schemes are usually evaluated about half way through a programme and on completion.

Importantly the Treasury 'Green Book' (HMT, 1997, p. 13) informs officials that in assessing the impact of programmes, it is not sufficient to use as the 'benchmark' the market conditions just prior to an intervention. These initial conditions may have changed without intervention. It is therefore necessary to examine what might have happened in the absence of a programme, assessing how market conditions and policies would have developed, and to then assess the programme's performance in terms of how it has addressed problems over and above what would have naturally occurred.

8.4 Evaluation Reports

Study of programme evaluation reports confirms the deployment of the above approaches in practice. Evaluations such as those undertaken for the Consultancy Initiatives (DTI, 1992), SUPERNET (Bessant, 1997), SMART (DTI, 1991b,1994a), MPI (DTI, 1997a), M90s' (DTI, 1995) and MAFF's Group Marketing Grant and Marketing Development Schemes (SAC, 1998), shows that in assessing scheme performance, evaluators work to confirm or otherwise the validity of programme rationale, levels of additionality experienced, the appropriateness of delivery strategies to negate market failures, the credibility of objectives and how well they have been achieved, and an assessment of VFM. Reports give views on the continuation of market failures, and make recommendations for the continuation of initiatives and, where necessary, for changes in the delivery strategy.

In assessing performance, work focuses on identifying the impact on programme participants, be they the recipients of grants, or those who have received support in the form of, for example, attending an awareness seminar. In all of the cases examined, firms are contacted on a sample basis, using a variety of techniques. In the examples quoted above, the 1994 SMART evaluation involved postal surveys (postal questionnaires), (DTI, 1994a, p. 18). The remainder adopted a mixture of techniques including face to face interviews with grantees, telephone interviews, and postal surveys. Additionally interviews with the officials and external agencies having responsibility for administering schemes were also conducted. Further information on the evaluation methodologies adopted is given in the case study examples (see appendix E, sections E.2.5, pp. 86-87, E.3.6, p. 91, E.4.5, p. 94, appendix F, section F.11, pp. 104-105, appendix G, section G.7, pp. 118-119, and appendix H, section H.6, p. 141). Study of the evaluations of SUPERNET (Bessant, 1995), (see chapter 7, section 7.3.1), M90s' (DTI, 1995, p. 7), and MPI (DTI, 1997a, p. 4) programmes shows how reports prepared in 'Monitoring' were fed into 'Evaluation'.

The author notes problems experienced by colleagues in evaluating schemes, particularly in awareness programmes. They have reported difficulty in assessing the impact of activities. Firms receive stimuli for change from a variety of sources, and as a result it can be difficult to conclude with certainty that an awareness activity was the prime motivator for change.

Guidance requires officials to describe how lessons learnt will be fed back into the policy development process. Examples of evaluation findings causing policy changes can again be seen through examination of programme evaluation reports. In the case of the Managing into the 90s (M90s) programme, the evaluation report for the second phase of the scheme (DTI, 1995, pp. 11-12) recommended that officials consider greater use of electronic means of delivering material, such as videos and computer discs. Phase three of the M90s saw the introduction of Connect for Better Business, which was an interactive video package for use on personal computers (PCs), with the programme material stored on Compact Disc Read Only Memories (CD ROMs).

In the Regional Supply Office (RSO) Programme, the independent evaluators Pieda plc in assessing the initial (three year) phase of the initiative, found the RSOs to be not providing value for money (Pieda, 1997, pp. 92-123). They concluded that the RSOs were unfocused, operating an 'all-comers' policy accepting any request for help, irrespective of whether client purchasers needed that help or not. Pieda recommended that the RSOs adopt a more strategic approach, focusing on larger projects, targeting those sectors which are economically important to their regions, becoming more involved in supply chain development, and helping land inward investment into the Country. Examination of the ROAME statement (ROAME, 1998) and the programme guidelines (RSOGL, 1998) for the second phase of the programme, shows the description of RSO operation was modified in exact accordance with these recommendations.

8.5 Corporate Organisation of Evaluation in the DTI

An interview with Dr. Ray Lambert (Deputy Director and Economic Advisor: Technology and Innovation Policy, in DTI's Innovation Policy and Standards Directorate) [Interview 18], was conducted to discover the detail of how 'Evaluation' is structured within the department. DTI's *Finance Handbook* (DTI, 1996b, section 3.4) was also studied. It was revealed that evaluation is mainly undertaken by economists located in the individual directorates and commands of the department, together with those employed in DTI's Assessment Unit (DTI, 1996b, section 3.4), (see also appendix J, section J.2, pp. 155-156). However some work is contracted out to consultants (see section 8.3 above regarding the discussion on evaluation plans). Examples of external contractors being employed to evaluate programmes are Pieda evaluating the RSO programme (section 8.4), and Segal Quince Wicksteed Limited, the Consultancy Initiatives (see appendix F, section F.8, p. 101). Evaluation work is overseen by DTI's Evaluation and Policy Improvement Committee (EPIC), with the consideration of plans for the evaluation of individual programmes falling to the Evaluation Methodology Group (EMG) (DTI, 1996b, section 3.4).

EPIC is chaired by the Director of DTI's Financial Resource Management (FRM) directorate, with its membership comprising the Chief Economic Advisor, the Chairman of EMG, all directors of directorates having responsibility for evaluation, representatives from the Central Policy Unit (CPU) and commands having an interest, together with Budget Holders or their representatives (DTI, 1996b, section 3.4). EPIC's function is concerned with evaluating programme strategies in terms of their ability to meet the department's policy objectives. EPIC was set up in the early 1980s', as a follow on from FMI, and has the role of ensuring evaluations are 'up to scratch', and then to draw the broad lessons [Interview 18]. DTI (1996b, section 3.4) shows how EPIC also draws up an overall evaluation plan each year, which details the programme areas that are to be evaluated. EPIC first decides on the priority areas for evaluation and then agrees the plan with ministers.

EMG is chaired by the Director, Economics, and its core membership is again drawn from Directors (or their representatives) having responsibility for 'Evaluation', and the Director, Programme Finance or a representative. Programme evaluators often attend. Programme managers attend both meetings of EPIC and EMG when their programmes are the subject of discussion. EMG's responsibility is to approve the evaluation plans, which are drawn up by the evaluators in the individual directorates. EMG subsequently considers drafted evaluation reports, and when satisfied that work has been completed satisfactorily passes copies of the reports to the 'budget holders' and EPIC, for possible further action (DTI, 1996b, section 3.4).

From his experience of the evaluation process, the author observes that responsibility for administering an evaluation exercise normally falls to EPIC, where a programme is the subject of an agreed evaluation plan. Otherwise responsibility falls to the evaluators in the directorates. In the author's experience, evaluations are always carried out by a party operating independently from the section operating the programme to be evaluated. As indicated in the DTI *Finance Handbook* (DTI, 1996b, section 3.4), 'Evaluation' can be undertaken by specialist teams within the department, or by external

consultants. Evaluation of 'high cost' programmes such as the Business Link initiative, will usually be undertaken by an external party.

Section 8.2 showed that a primary role for evaluating programmes was to add value, by feeding back the lessons learned into future policy making. However close study of the evaluation process reveals there to be a number of issues involved. Chapter 6, section 6.1.1, discussed several of these. Determining value for money is not an 'exact science', with no 'hard and fast' baseline being available against which to make absolute judgements of performance, and hence value. Furthermore, what represented value was partly dependent on individuals' perceptions of what represented the priority market failures to tackle. However, it was proposed that assessment of performance was still possible. Officials in demonstrating programme rationale concentrate on identifying market failures in areas where historically governments have a record of intervention. By setting well defined objectives for the degree by which problems are to be reduced, it is possible to reach conclusions relating to programme performance (chapter 6, section 6.9).

There are, however, several other problems associated with the current evaluation process, and these are discussed in detail in appendix J, pp. 155-156. There are difficulties in drawing the best practice lessons by looking across programme evaluations. First it has to be shown that past lessons remain relevant, as circumstances change and new priorities emerge (the author observes that this view is in step with the observations made in chapter 6, section 6.1.1, regarding changing priorities causing alterations in perceptions of value for money). Furthermore, comparing the findings of evaluation reports is made difficult by the lack of coherence in reporting, due to policy changes. It is also suggested that placing the evaluators within the individual directorates fosters a 'silo' mentality, leaving people to do things in their own individual ways. In addition, it is proposed that the focus on delegating responsibility for the administration of budgets, causes evaluation reporting to be weighted towards informing budget management. This, it is suggested, can give rise to tensions through different interpretations being placed on evaluatory findings, between the budget holders and the

officials having day to day responsibilities for programme operation. This issue was again discussed in chapter 6, section 6.1.1. For some further insights into the operation of the evaluation process in DTI, the reader is referred to appendix J.

8.6 Inputs to Evaluation and Feedback

The above observations suggest the important 'inputs' to 'Evaluation' are the programme ROAME statements, and programme progress and monitoring reports. As discussed above, other inputs are represented by data collected during site visits by the evaluators to programme participants, contractors, and in meetings with officials responsible for programme operation.

8.7 Outputs from Evaluation

Treasury guidance (HMT, 1997, p. v), and DTI guidelines (DTI, 1999a, p. 42, 1999c, p. 1) state that programmes must be subjected to evaluation, with the subsequent evaluation reports widely circulated. Evaluation reports are hence an output of the development and administration process, and with wide circulation providing the feedback mechanism. Finally, based on the observations made in this chapter, Figure 8.1 below contains the IDEF0 Level 2 diagram describing the process component of 'Evaluation'.

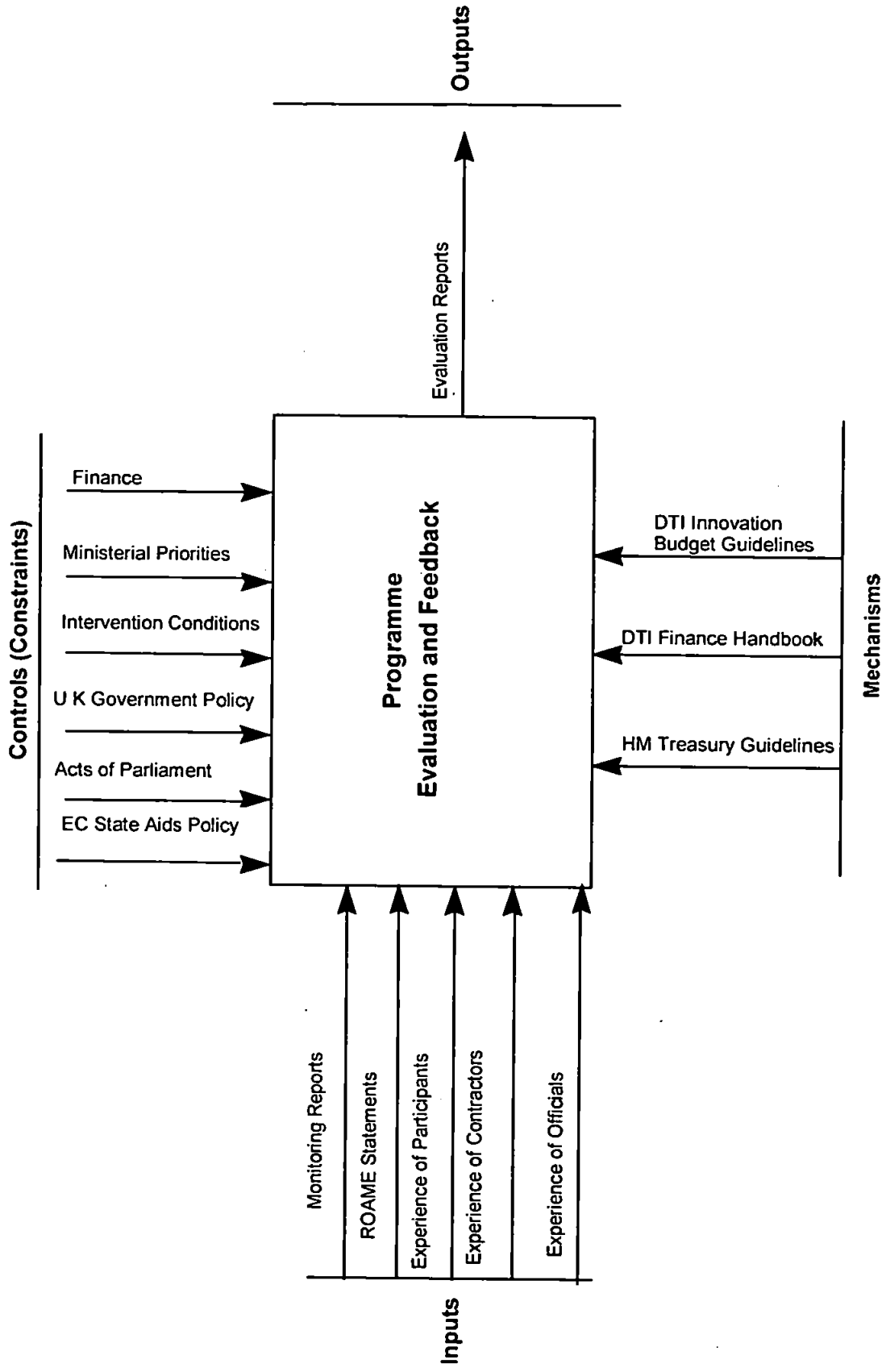

Figure 8.1 IDEF0 Level 2 Diagram: Evaluation and Feedback

8.8 Completion of the Mapping Task

The above analysis of the component process of 'Evaluation and Feedback' completes the last stage in mapping the process of the design and administration of support programmes. It is therefore now possible through inspection of the analyses undertaken in chapters 5 to 8, to construct an IDEF0 Level 2 diagram showing the overall structure of the design and administration process. Analysis has shown the structure of the process to be broadly sequential, and to comprise the following components and elements:

(i) **Issue Identification** (chapter 6)

Conception and Validation of Programme Ideas (chapter 6, section 6.2)

Develop the Programme ROAME statement (chapter 6, section 6.3):

Step 1: Build Evidence of Market Problems

Step 2: Identify the Factors Inhibiting Organisations From Adopting Good Practice

Step 3: Develop the Delivery Strategy

Step 4: Demonstrate the Value of Proposed Interventions

ROAME Approval (chapter 6, section 6.4 and 6.5)

(ii) **Programme Implementation** (chapter 7)

(iii) **Evaluation and Feedback** (chapter 8, sections 8.2-8.7).

From these observations an IDEF0 Level 2 diagram describing the process components of the overall design process was constructed, as shown in Figure 8.2 below:

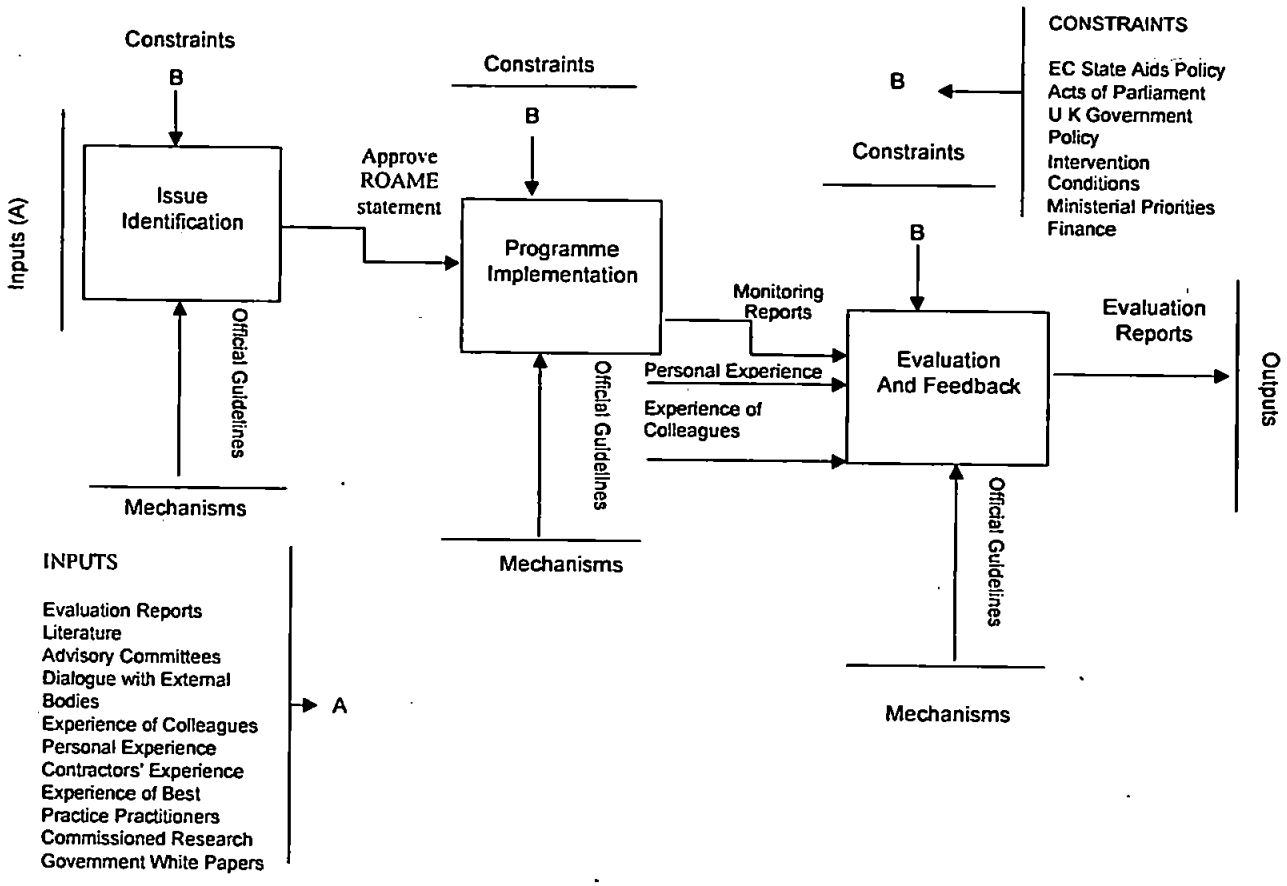

Figure 8.2 IDEF0 Level 2 Diagram: The Component Processes of Programme Design and Operation

Inspection of the findings of chapters 5 to 8 inclusive suggests the following flow chart (Figure 8.3) as describing the principal steps comprising the design and administration process:

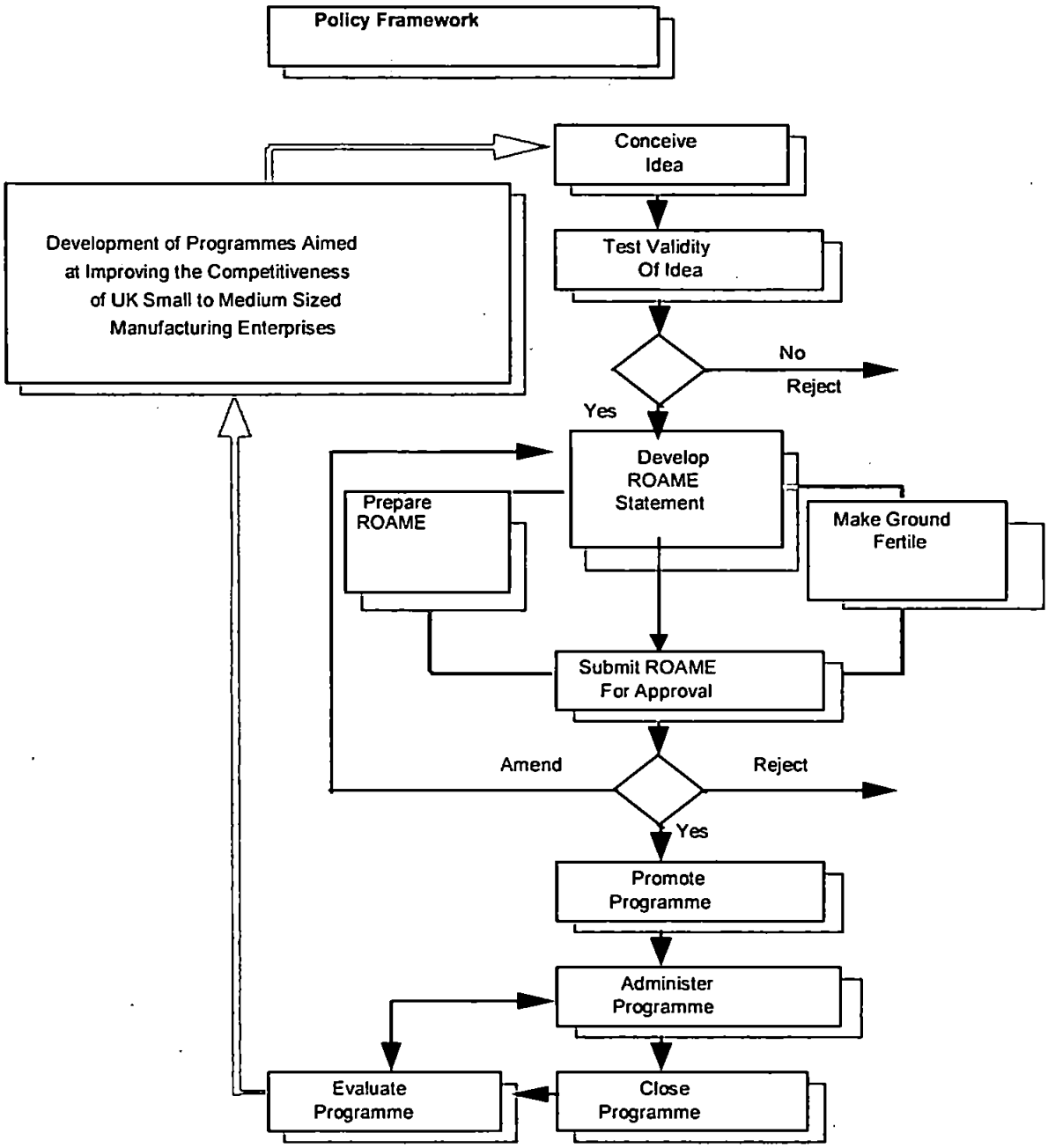

Figure 8.3 Flow Chart of the Process of Designing and Administering Programmes

8.9 Conclusions

The process component of 'Evaluation and Feedback' has been mapped and a detailed description of structure of the process and the mechanisms involved has been obtained. An IDEF0 Level 2 diagram describing the component process has also been drafted. The supplementary question concerning 'Evaluation' posed in chapter 3, section 3.8.3 has thus been answered. The question was:

(c) "Evaluation including Feedback, what are the procedures adopted in evaluating programmes and feeding back evaluation results to the design process"?

Chapter 3, sections 3.3 and 3.5, introduced and discussed the topic of 'incrementalism'. Here it was suggested that policy design is the subject of continual improvement, with designs making a series of advances towards solving problems, as against attempting to implement truly optimised solutions from the beginning. It was further proposed that policy evaluation, where the lessons learned from operating programmes are fed back into, and thereby inform the policy making process, represents a form of 'incrementalism'. Analysis recorded in section 8.4 above has shown that, as might be anticipated, 'incrementalisation' manifests itself in programme design. Examples have been provided of 'incrementalism' occurring in practice, with the recommendations made in programme evaluation reports being adopted in future scheme designs.

Detailed study of the evaluation process has revealed several imperfections. Section 8.5 referred to there being no absolute measure for measuring value for money. Much of the problem lies with that of priorities which inevitably change with time. However, as suggested in chapter 6, section 6.9, the current arrangements which combine rigour in programme design with the setting of unambiguous targets for the reductions in market failure, provide a sufficiently robust means of assessing value and from a practical standpoint, can be regarded as adequate for purpose. Given the continually changing nature of priorities, and that the existing arrangements have demonstrated their ability to result in credible evaluations, it is concluded that seeking a means of introducing a baseline from which

absolute evaluation of programme performance could be calculated, would be difficult to achieve. Hence it is regarded as something which should not be attempted within the scope of this research.

Section 8.5 also showed that a number of other factors function to inhibit the process of learning from evaluation. These can be summarised as people challenging the relevance of old schemes to meet new priorities, and evaluators focusing more on the budgetary rather than the operational issues. These issues, it is felt, are addressable, and worthy of investigation to discover ways of introducing improvement, a matter which is investigated in chapter 10, section 10.5.12.

Importantly the process of designing and administering programmes has been mapped. The process components and elements which comprise the overall process, and their interrelationships have been investigated and described. A set of IDEF0 diagrams have been constructed which provide a static model of the design and administration process. Thus it is considered that the fourth research question presented in chapter 3, section 3.8.2: **Discovering the Nature of the Design Process** – "What is the scope of the process describing the designing and implementing policy for introducing and operating programmes which support firms in becoming more competitive, what comprises that process in terms of the elements which make up the whole system, and how do these elements interrelate in delivering support policy?", has been answered.

In constructing the model of the design process, a detailed description of the mechanisms in each of the above components and stages has further been obtained. From inspection of the literature and observation of documentation within government, the author is not aware that such a complete description of the process exists elsewhere. It is therefore proposed that in describing the design system, the author has been able to make a contribution to knowledge. Thus the first objective of the research, as described in chapter 1, section 1.2, has been achieved. The objective was:

a) To contribute to knowledge in the area of policy by obtaining a description of the process of designing and administering programmes which help firms become more competitive, through detailed research of that process.

The next stage of the research aimed to answer the fifth research question, which concerned how the design process can be improved. Chapter 1, section 1.2, in setting out the second research objective (b), suggested that research findings be helpful in identifying improvement strategies. In developing the model, much of what takes place in practice in programme design has been recorded. This knowledge can therefore be employed as a source of reference in developing proposals for improvement. However it was thought first necessary to test the validity of the process model before employing its description of the design system to inform investigation of improvement strategies. Testing of the model is discussed in chapter 9 which follows.

CHAPTER 9

TESTING THE MODEL

9. TESTING THE MODEL

9.1 Introduction

Chapters 5, 6, 7, and 8 recorded the analysis of the process of designing and administering programmes, and from the findings of investigations developed a series of IDEF0 diagrams describing the design process. Chapter 5 provided a 'top-level' diagram for the process as a whole. Chapter 6 described and developed an IDEF Level 2 diagram illustrating the component process of 'Issue Identification'. Chapter 7 looked at 'Programme Implementation', and finally Chapter 8 provided a description of the 'Evaluation and Feedback' activity.

In order to test the efficacy of the system model to describe the overall structure of the design process, five programmes were taken as case study examples and investigated in-depth to reveal the detail of how they were designed and implemented. It was then possible through inspection of the procedures employed, to see how well they conformed in structure with those predicted by the model. The case study examples selected were:

- The Enterprise Initiative (EI);
- The Research and Technology (R & T) Initiative;
- The Consultancy Initiatives (CI);
- Managing into the 90s (M90s) programme;
- The Manufacturing, Planning, and Implementation (MPI) programme.

The case study examples were selected on the basis that they were regarded as high profile activities, by officials (see chapter 1, section 1.1).

The following section describes in more detail the approach adopted in gauging the efficacy of the design process model. For each process component described in chapters 5 to 8, that is, 'Issue Identification', 'Programme Implementation', and 'Evaluation including Feedback', the five case studies were each examined in detail, to determine whether the procedures involved in their development and administration fitted the structures as defined by the process model. Conformance with the IDEF0 model was taken to be indicated by the ability to categorise the procedures identified, under the headings as defined by the model for each of the process components.

In researching the case studies, a number of research techniques were employed to gain the necessary insights to the procedures which had been used. These were as follows:

- Study of file papers including examination of programme ROAME statements and evaluation reports;
- Interviews with people directly concerned with the design and delivery of the case study programmes, which included officials and staff in organisations contracted to undertake work for the department;
- Ad-hoc discussions with the above personnel carried out as part of day to day interactions in support of the author carrying out his work;
- Examination of the author's personal experience.

Appendices D to H describe the detailed analysis of the case studies. Appendix D investigates the Enterprise Initiative, appendix E the Research and Technology Initiative, appendix F the Consultancy Initiatives, appendix G Managing into the 90s programme, and finally appendix H the Manufacturing, Planning, and Implementation programme.

It was also considered to be necessary to demonstrate that the structure and content of the model, represents a set of good practice mechanisms and approaches in programme design and administration. If the model could be shown to be representative of good practice, then confidence in its wider use would be enhanced. Appendix K analyses good practice in programme operation, with the examination of scheme performance focusing on the case study examples. In its analysis, appendix K draws heavily on the findings of programme evaluations. Hence conclusions relating to good, or bad practice, are lent credibility through them being based on a wide range of expert opinion. The findings of appendix K were therefore simultaneously studied, to confirm the status of the mechanisms adopted in the case study programmes in terms of them being representative of good practice. Confirmation of the approaches as being examples of good practice, together with their descriptions also being seen as conformant with those predicted by the IDEF0 model, was taken to indicate the qualification of the model itself to be classified as good practice.

To help the reader confirm for his or herself, the validity of the model, the next section contains a brief summary of the validation process. For each of the process components and elements detailed by the IDEF0 model, examples from the case studies are briefly described. From these descriptions it is possible to identify the structures of the procedures adopted, and confirm that they conform with that predicted. In each instance cross referencing to the appendices containing the analysis of the case study examples is given, in order that people may study the validity of the model in greater detail.

9.2 Testing the Validity of the Model

9.2.1 The Enterprise Initiative (EI)

The Enterprise Initiative is discussed in appendix D. EI was a promotional campaign designed to raise the levels of awareness of DTI's services to help firms become more competitive (sections D.1 and D.2, p. 78).

Issue Identification

Conception and Validation of Ideas

The SoS felt people were unaware of DTI's help for firms, (see appendix D, section D.3, p. 78).

ROAME Development and Approval

Not applicable: EI was a promotional campaign rather than a support programme (see appendix D, section D.3, p.78).

Programme Implementation

Implementation comprised collecting DTI's schemes under a single umbrella, EI, then promoting EI and its constituent programmes in a national advertising campaign, (see sections D.3, p. 78, and D.4, p. 79).

Evaluation including Feedback

The performance of the EI advertising campaign was assessed by regular monitoring of peoples' awareness of EI, (see section D.5, pp. 79-80). The results of monitoring were employed to focus the campaign on to areas where awareness of EI was low. The promotional campaign appears to have been successful, with 52% of firms aware of EI within six months of the launch of the campaign, (see section D.5, p. 80).

9.2.2 The Research and Technology (R & T) Initiative

The R & T initiative is discussed in appendix E. The objective of the programmes operated under the initiative was to raise levels of competitiveness in SMEs, by encouraging them to undertake more research and development (R&D).

Issue Identification

Conception and Validation of Ideas

The R&T initiative was launched as part of EI, and brought together under a single title to help people identify the support for research that was available from DTI, (see appendix E, section E.1. pp. 82-83).

ROAME Development and Approval

Not applicable. The R & T Initiative was not a support programme, rather, as discussed above, this initiative represented a banner under which to promote the constituent support activities, (see section E.1, pp. 82-83).

Programme Implementation

Not applicable, see above.

Evaluation including Feedback

Not applicable, see above.

9.2.2.1 General Industrial Collaborative Projects (GICP)

GICP was an umbrella programme (see section E.2, pp. 84-85) that supported a number of project programmes at Research and Technology Organisations (RTOs).

Issue Identification

Conception and Validation of Ideas

The idea for GICP was rooted in the government wishing to maintain sectoral research facilities, (see appendix E, section E.2, p. 84).

ROAME Development and Approval

Market failures included the unwillingness of SMEs to share information, and inability to shoulder risk. Individual ROAMEs were prepared for each specific programme, with problems identified by talking to RTOs, (see section E.2.1.1, p. 85). Objectives were set as to promote co-operative and collaborative research, (see section E.2.2, p. 86). The RTOs represented the principal delivery mechanism. RTOs undertook research on behalf of member firms, and as part of their membership services they disseminated the results to members, (see section E.2. p. 84, section E.2.3, p. 86).

Programme Implementation

GICP: Programme administration was the responsibility of officials, (see section E.2.4, p. 86).

Evaluation including Feedback

Evaluation of GICP programmes was undertaken in 1996, (see section E.2.5, pp. 86-87). The evaluation method included face to face interviews with senior management and people in the Research and Technology Organisations (RTOs), and the study of project progress reports held on file. Appendix K, section K.3.2.1, pp. 162-164, discusses the performance of GICP. The GICP evaluation report found the programme's rationale to have been valid (DTI, 1996c, p. 10), and that DTI's support had been effective in overcoming the barriers to collaborative research, with the objectives substantially met (pp. 9-12). Concluding, the evaluation report found GICP to have been a valuable and successful initiative, and its closure to have been unfortunate, (DTI, 1996c, p. 24). Feedback of results into future policy was not applicable due to the cessation of GICP funding.

9.2.2.2 Small Firms Merit Award for Research and Technology (SMART)

SMART aims to promote R&D by firms by offering grants to innovative SMEs.

Issue Identification

Conception and Validation of Ideas

The idea for SMART was conceived as a result of officials studying US policy for helping small firms, (see appendix E, section E.3.2, pp. 88-89).

ROAME Development and Approval

The development of SMART was undertaken prior to the introduction of the ROAME approach. Therefore it was not possible to study an initial ROAME, and this coupled with the inability to access the people responsible for the programme's introduction, meant that it was not possible to determine from these sources how the original rationale was built, (see section E.3.1, p. 88). However the programme evaluation report (DTI, 1991b, p. 3) refers to the development of the rationale being the subject of several approaches, (see section E.3.1, pp. 87-88). The rationale centred round the market failure of small firms facing difficulty in raising finance to fund research. Objectives were set for SMART, such as to stimulate the development of new products, (see section E.3.3, p. 89). The principal delivery mechanism was the award of grant funding to reduce the level of risk such as to encourage small firms to undertake R&D, (see section E.3.4, p. 89). Section 8.3.4 (p. 90) reveals the approval sequence for the 1991 ROAME (ROAME, 1991b) to have been IPC and then ministers.

Programme Implementation

Head Quarters DTI staff have overall responsibility for the running of SMART, with officials in the regional offices of government responsible for the appraisal of applications, and the award and administration of grants, (see section E.3.5, p. 90). Administration of the grants included both financial and project monitoring. The series of 'competitions' in SMART helped promote the programme, (see appendix K, section K.3.2.2, p. 169). SMART was still a current programme at the time of completing this thesis.

Evaluation including Feedback

Appendix E, section E.3.6, (p. 91), describes the two evaluations of SMART (DTI, 1991, 1994a), which was based on postal questionnaires. Appendix K, section K.3.2.2, (pp. 165-166) reviews the performance of SMART. A high level of additionality was recorded in the SMART evaluation report (DTI, 1991b, p. 4), while the 1994 evaluation (DTI, 1994a, pp. 3-4) confirmed the core rationale for the programme, that is to overcome the problem of small firms being starved of finance. Objectives were found to have been substantially met, (section K.3.2.2, pp. 166-168). Concluding, the report found SMART to have been valuable and recommended its continuation. Section K.3.2.2 (pp. 169-170) provides an example of the evaluatory results being fed back into policy development. The SMART evaluation report (DTI, 1994a, pp. 14-15) recommended the continuous assessment of project proposals. The principle was subsequently adopted in the administration of the programme.

9.2.2.3 Support for Products Under Research (SPUR)

SPUR had similar objectives to the SMART initiative, but aimed at supporting the 'larger' SME.

Issue Identification

Conception and Validation of Ideas

The idea for SPUR arose as a result of DTI experiencing a drop in applications for funding, following the decision to substantially reduce the level of single company support in 1988. A new programme was seen as necessary to plug the gap in DTI's grant provision, (see section E.4.1.1, p. 92).

ROAME Development and Approval

Similarly to SMART, the rationale for SPUR revolved round the difficulty of small firms experiencing difficulty in identifying finance to resource research (see section E.4.1, pp. 91-

92). However, as indicated above, a gap existed in the DTI's grant provision, but whilst SMART catered for the very small firm, no provision was made for the larger SME. A scheme aimed at the latter type of firm was therefore seen as required, (see section E.4.1.1, p. 92). Objectives were set for SPUR. These included the setting of targets for the number of supported projects, and to stimulate additional levels of R&D in firms, (section E.4.2, pp. 92-93). As with SMART, the principal delivery mechanism was to employ grant funding to reduce risk and thereby encourage firms to invest in higher levels of research, (section E.4.3, p. 93). Section E.4.3 (p. 93) also shows the SPUR ROAME (ROAME, 1990b) to have been presented to the IPC. Chapter 6, section 6.4.5 indicates SPUR to have additionally been presented to ministers, and Treasury.

Programme Implementation

Delivery of SPUR was through the DTI's Regional Offices, which were responsible for the identification of projects (including the appraisal of applications – see appendix K, section K.3.2.3, pp. 174-175), and the administration of the grants awarded, (see section E.4.4, p. 94). Appendix K, section K.3.2.3, records how DTI's Regional Offices ran workshops to apprise firms of how to draft applications for SPUR funding (pp. 174-175). Inspection of an internal note summarising the history of SMART showed that SPUR was subsumed into the former in 1997, (see appendix E, section E.4.5, p. 94).

Evaluation including Feedback

Section E.4.5, (p. 94) discusses the evaluation of SPUR as detailed in the programme evaluation report (DTI, 1994b), which included the use of postal questionnaires and face to face interviews. The evaluation found SPUR to have had a positive effect on promoting R&D in SMEs, and the programme's objectives generally met, (see appendix K, section K.3.2.3, pp. 171-175). Continuation of the scheme was recommended. Additionality was found to be high (p. 171). Section E.4.4 (p. 94)

describes how the 1994 evaluation of SPUR (DTI, 1994b, p. 17), prompted the integration of SPUR with SMART Stage 2.

9.2.3 The Consultancy Initiatives (CI)

CI is described in appendix F. The aim of CI was to encourage SMEs to hire consultants to help them improve their management capabilities.

Issue Identification

Conception and Validation of Ideas

Officials observed continuing management deficiencies in SMEs, which indicated the need for continued support in the form of subsidised consultancy. The SoS also wanted better co-ordination of DTI's programmes, which acted as the trigger for bringing together the department's previous advisory schemes, (see appendix F, section F.2, p. 96).

ROAME Development and Approval

Section F.3, (pp. 96-98), sets out the steps that were taken in drafting the rationale for CI. The DTI White Paper (HMSO, 1988, pp. 24-25) was cited as providing evidence of problems experienced by SMEs, and the need to improve their management skills. The results of previous evaluation reports provided further evidence of market failure, (see section F. 3, p. 97). The award of cash grants to overcome firms' suspicions of consultants and thereby encourage SMEs to hire them, was the principal delivery mechanism employed in CI (section F.4, p. 98). Objectives for CI included initially completing 1,000 consultancies per month towards obtaining a market penetration of around 3% for CI. The use of the VAT Register to estimate the number of target firms was observed, (see section F.5, p. 99). The approval sequence of the CI ROAME (ROAME, 1988b) was first presentation to the IPC, then to ministers, Treasury, and finally the European Commission, (see section F.7, p. 101).

Programme Implementation

Initial appraisal of applications was undertaken by DTI's regional office staff, with headquarters personnel having overall responsibility for the administration of the initiatives. Day to day financial monitoring, and the listing of consultants, was undertaken by the scheme contractors elected to operate each of the component 'initiatives', (see section F.8, pp. 101-103). CI was promoted as part of the Enterprise Initiative (EI) promotional campaign (see section F.9, p. 103), and the last application for a grant was received in September 1994 (section F.10, p. 104). Closure was formerly announced using the mechanism of a 'planted' Parliamentary Question (PQ), (see section F.10, p. 104). Monitoring of CI to track its performance was undertaken. Programme monitoring comprised such activities as providing data on the firms receiving support, and qualitative reporting on consultancy projects, (see section F.6, pp. 100-101).

Evaluation including Feedback

CI was subjected to evaluation, (see section F.11, pp. 104-105). Evaluation was based on surveys employing face to face interviews. Appendix K, section K.3.3 (p. 175-176) describes how inspection of the CI evaluation report (SQW, 1992), and a report by Ernst and Young (Ernst and Young, 1990, p. 6), demonstrated the rationale for CI to have been valid. The scheme was found to have been successful overall in meeting its objectives. As discussed above (section F.3, p. 97), in defining market failure officials drew on the results of evaluating the previous advisory schemes. This evidence represents an example of the results of evaluation being fed back into policy design.

9.2.4 The Managing into the '90s (M90s) Programme

Appendix G discusses the M90s 'awareness' programme. M90s aimed to raise the levels of competitiveness in firms by making them more aware of the good practice they should adopt in their operation.

Conception and Validation of Ideas

M90s comprised three phases of which the first two were the subject of research. Section G.2.1 (pp. 107-108) looks at how the idea for M90s was conceived in the first phase. Officials initially wanted to extend a previous awareness scheme, the Towards Integration (TI) programme. However the SoS rejected the idea of continuing with TI as a 'stand alone' activity, as it was contrary to his wish to see the co-ordination of DTI programmes. In response, officials met and agreed to the idea of bringing DTI's awareness activities together under a single umbrella programme, that is M90s.

ROAME Development and Approval

Section G.2.2 (p. 108) records how officials had identified the importance of factors such as design, quality and management, and the need for these to be managed as part of a corporate strategy, in obtaining competitive advantage. However it had been observed that too few firms recognised these facts, and then acted upon them. Section G.2.2.1 (pp. 108-109) records how this market failure was identified. The DTI White Paper (HMSO, 1988, pp. 24-25) provided evidence of poor management in SMEs. An advisory council report (ACARD, 1983, pp. 46-48) provided evidence of firms failing to plans the application of new technologies as part of developing their overall business strategies. These findings were confirmed by an internal DTI study (MAM, 1988). Much of M90s development occurred after the approval of the ROAME statement. Section G.2.3.1 (p. 110) discusses how a report commissioned from PA Consultants (PA, 1989), determined the delivery structure of M90s. Activities were tailored such that chief executives in firms would recognise and thus be receptive to the messages being delivered. Officials also drew on their experiences of operating previous awareness programmes in developing M90s, (see section G.2.3.2, p. 111).

Section G.2.4 (pp. 111) records developing the rationale for the continuation of M90s into a second phase. For phase 2, the delivery approach was substantially unchanged, (see section G.2.4.1, p. 111). Evidence of a continuing market failure was drawn from a number of sources, including the Advisory Council on Science and Technology report on AMT (ACOST, 1991), a consultancy report (Ingersoll Engineers, 1991), and the House of Lords Select Committee report on Science and Technology (HMSO, 1991), (see section G.2.4.2, pp. 111-113).

The delivery strategies for phases 1 and 2 included activities such as road shows, workshops , demonstration firms, and literature, (see sections G.5.1 and G.5.2, pp. 115-117). Objectives set for phases 1 and 2 included the numbers of events to be held, and the total numbers of firms attending, (see sections G.3.1 p. 113, and G.3.2, pp. 113-114). The M90s ROAME statements (ROAME, 1988a; ROAME, 1991a) were subjected to a Requirements Committee (AMTC), an IPC, then ministers, in the approval sequence, (see section G.4.1.1, p. 115).

Programme Implementation

M90s was administered by DTI officials. External contractors were appointed through competitive tendering to run events, including their promotion, (see section G.5.3, p. 117). Formal appraisal was not applicable as M90s did not involve the grant funding of firms (section G.5.4, p. 117). Officials did, however, appraise individual activities and instigate performance monitoring of the programme. Section G.5.5, p. 118, discusses programme monitoring, and shows it to have included the measurement of the distribution of literature, and an assessment of firms taking action as a result of participating in M90s.

Evaluation including Feedback

Section G.7 (pp. 118-119) investigates the evaluation of M90s. The evaluation method described in the evaluation report (DTI, 1995) was based on examination of monitoring returns, and interviews with

'experts' to confirm the validity of the programme rationale. Section K.3.4 (pp. 178-181) of appendix K (pp. 178-179), reveals the M90s evaluation report to have found the rationale for M90s to be valid (DTI, 1995, p. 2), and that the programme had achieved its objective of raising the competitiveness of firms (p. 11), (section K.3.4, pp. 179-180). An example of the M90s evaluation informing future policy is provided in chapter 8, section 8.4, where the report (DTI, 1995, pp. 11-12) recommended greater use of electronic media in delivering the M90s messages. The recommendation was adopted in phase 3 of the programme, which employed the use of CD ROMs.

9.2.5 The Manufacturing Planning and Studies (MPI) Programme

The MPI programme is discussed in appendix H. MPI aimed to encourage SMEs to install good practice into their operations by employing consultants to help them plan their use of new technologies holistically, that is in accordance with the needs specified in their business plans.

Issue Identification

Conception and Validation of Ideas

Appendix H, section H.2.2 (pp. 128-129) describes the conception of the idea for MPI. The idea grew out of a perception that SMEs needed to adopt a strategic approach to planning their business operations, and that many were failing to do so. Evidence of market problems were derived from many sources such as a research paper (Fleck, 1988), a programme evaluation report, and a journal report (Management Today, 1989, pp. 68-96). Section H.2.3 (p. 129) shows how initial ideas for MPI were submitted to senior staff for approval, which was subsequently received.

ROAME Development and Approval

Following the 'go ahead' to develop a ROAME statement for MPI, officials worked to substantiate the rationale for the scheme, (see section H.2.4, pp. 129-132). Further evidence of

market failure was drawn from consultancy reports, interviews with other officials, consultants, and a leading academic. Steps were taken to analyse the good practice actions which firms should take. Officials derived evidence of good practice from sources such as an ACOST report (ACOST, 1991, pp. 11-13), and consultancy papers (A T Kearney (1989a, 1989b). A report was commissioned from the Production Engineering Research Association (PERA), which investigated two groups of projects, the first where technology had been implemented holistically, and secondly piecemeal. Comparison of the approaches demonstrated the efficacy of adopting the former approach.

Interviews with consultants showed the complexity of holistic planning to be such that senior consultants would be required to help SMEs in the holistic planning of business operations, and thus the costs involved likely to be a deterrent in firms hiring external expertise. The award of grants was employed to overcome inhibitions and encourage firms to embark on consultancy led projects, (see section H.3.1, pp. 132-133). Section H.3.3, (pp. 135-136) describes the setting of MPI objectives. Experience of operating the previous AMT Studies programme was employed to assess likely take up of MPI grants, whilst the VAT register was interrogated to estimate the size of the market for MPI. Objectives set included a target of 175 projects, and the formation of 30 advisor consortia to increase the level of the UK's consultancy provision. The MPI ROAME (ROAME, 1990a) was subjected to a Requirements Committee (AMTC) for endorsement, then for IPC, ministerial, and Treasury approval. MPI was also notified to the European Commission under the State Aids Rules, (see section H.3.4, p. 137).

As an MPI like scheme was not continued, the results of its evaluation were not employed in the development of future policy. However an example of previous lessons being employed in the development of MPI, is given by the deployment of experience of operating the previous AMT Studies programme in setting the scheme's objectives, (see section H.3.3.1, p. 135)

Programme Implementation

DTI officials had overall responsibility for MPI, which included financial monitoring and the tracking of programme progress, (see section H.5.3.1, p. 139). A scheme contractor was appointed through competitive tendering to manage the day to day administration of MPI, (see sub- section H.5.1, p. 138). The contractor was responsible for tasks such as the monitoring and management of programme spend, the appraisal of project applications, and the listing of advisors. The programme was launched by ministers and promoted by the scheme contractor who prepared a brochure explaining the role of MPI, (see section H.5.4, pp. 140-141). Closure of the scheme was affected through the use of a planted PQ, (see section H.5.5, p. 141).

Evaluation including Feedback

Section H.6 (p. 141) sets out the evaluation strategy for MPI, which was based on face to face interviews with MPI participants, and postal questionnaires. Appendix K, section K.3.5 (pp. 181-187) shows the MPI evaluation report (DTI, 1997a, p. 23) as finding the rationale for MPI to have been valid (section K.3.5, p. 181), and that this type of scheme is useful in spreading the message of encouraging firms to adopt good practice (p. 181). Participant firms had benefited from their consultancies, and the programme was valued by both firms and the consultants (p. 182). Analysis has not revealed any of the lessons learned from operating the scheme to have been used to inform the design of future programme policy.

9.3 Generalisabilty of Research Findings for Wider Application

A significant part of the rationale for undertaking the research described in this thesis, lies in the ability to apply the research findings in other government situations, such that a wider audience than DTI can benefit. Thus the final question posed in chapter 1, section 1.9 was:

(vi) "What scope is there for exploiting the results of research beyond DTI"?

The research strategy adopted for investigating the design process was based on the case study method. Chapter 4, section 4.8.1 argued that findings of research developed from case studies are generalisable to similar situations.

It is suggested that the process of programme design, administration, and evaluation, as implemented by DTI, is mirrored elsewhere in government. Thus there are good grounds for supposing that the design model developed in chapters 5 to 8 may be applied by officials across the Whitehall departments. The basis for this proposition rests partly on evidence contained in the Treasury's 'Green Book'. The 'Green Book' requires all government departments to adopt the ROAME approach in developing cases for support, and hence enforces a uniform structure to programme development. Inspection of the 'Book' also shows it to require all departments to install arrangements for scheme monitoring and evaluation (see chapter 3, section 3.3.1).

Other considerations lent weight to the hypothesis of generalisability. Inspection of the evaluation report of MAFF's Group Marketing Grant and the Marketing Development Scheme (SAC, 1998), (the report is confidential and has not been published) revealed many similarities in programme design with the processes employed by DTI, (p. 1). The evaluators, the Scottish Agricultural College (SAC), begin by setting the background to the introduction of the scheme. SAC report the Group Marketing Grant (GMG) being introduced in 1992, in response to a study conducted by the Agriculture Minister which had identified a UK Food Trade Gap deficit of £6 Billion. The report found that a principal problem arose from the major retailers requiring produce from their suppliers which met increasingly stringent requirements, in terms of consistent quality, service, volume, and price. The major retailers were also found unable to deal with small and poorly managed businesses. UK producers, it was observed, were failing to respond to the market opportunities offered them. A number of factors are given as contributing to the problem, including poor communication of the buyers' requirements and a lack of collaboration.

The author makes two observations at this point. Firstly is the use of the mechanism of contracting research of the market to identify problems. This is an approach widely used in DTI to help in determining market failure, as discussed in chapter 5, section 5.2.4. Secondly, the first two steps identified in chapter 6, section 6.3.2 in developing rationale for DTI programmes, can be seen to be present in this example. Step 1, which is concerned with identifying market problems in terms of firms being uncompetitive is, in the MAFF example, exhibited by the failure of the producers to meet the purchasing requirements of the retailers. Step 2, which is concerned with determining the good practice actions which firms should take, and understanding the reasons why they are not, is also evident, for example by the producers failing to collaborate.

Chapter 6, section 6.3.2, showed step 3 to be concerned with identifying a delivery strategy to negate market failures. The SAC report shows this step to be have been undertaken, revealing that the strategy adopted in GMG to overcome problems as being: "*to encourage the development of commercially-managed marketing groups for agricultural and horticultural produce*" (SAC, 1998, p. ix). Encouragement for firms to take the appropriate action was provided in the form of financial grants, again a mechanism widely adopted by DTI.

The GMG scheme was replaced in 1994 with the Marketing Development Scheme (MDS), (SAC, 1998, p. 2). SAC refer to MDS building on the experience of operating CMG, an approach again often taken within DTI. The evaluation report (SAC, 1998) displays other features which indicate similarity with DTI. The report comments on the validity of the programme rationale, continuing market failure (pp. 11-32), impact of grants on individual firms, 'additionality', and national benefits in terms of exports and import substitution (pp. 33-100). Arrangements for scheme administration are also discussed. From these observations the author concluded the process of designing and implementing programmes in MAFF is close to the procedures adopted within DTI, lending credibility to the claim of the generalisability of research results.

Potential to apply the model beyond the UK Government was also seen. The Technopolis report *Good Ideas in Programme Management* (Arnold, Boekholt, and Keen, 1999, pp. 8-14) describes at a general level, the procedures adopted by governments world wide, but particularly across Europe, in the administration of Research and Technology Development programmes. Inspection of these procedures suggests a similar structure to that employed in the UK, with the stages of the ROAMEF process clearly identifiable. It is therefore concluded that there exists good potential to exploit the design model described in this thesis more widely, the design model also adding value by describing the whole process of design through implementation to evaluation, in detail. The findings of this thesis should also add value in a further way. The Technopolis report refers to a later version of the report containing good practice examples of programme implementations. The author proposes that the good practice identified in the present research would provide a valuable adjunct to Technoplis's work.

9.4 Conclusions

The draft IDEF0 model as developed in chapters 5, 6, 7, and 8, had suggested the stages of programme design and operation to be:

(i) Issue Identification (chapter 6)

Conception and Validation of Programme Ideas (chapter 6, section 6.2)

Develop Programme ROAME statements (chapter 6, section 6.3)

ROAME Approval (chapter 6, sections 6.4 and 6.5)

(ii) Programme Implementation (chapter 7)

(iii) Evaluation and Feedback (chapter 8, sections 8.2-8.8).

The analysis of the case study examples undertaken in section 9.2, reveals that the processes involved in their design and subsequent implementation to conform closely in terms of their structure, with that predicted by the process model. Each of the components and elements defined by the model have been shown to be substantially identifiable in the examples above, indicating the credibility of the model to describe the process of designing and administering programmes. Further confidence in the model's ability to describe the overall process may be gained from inspection of appendices D to H, where the approaches adopted in the case study examples are described in detail. Importantly, the process model appears to be generic, being valid for Research and Technology, consultancy based, and awareness programmes, each of these areas being represented in the case study examples. These observations suggest that the model can be widely adopted for analysing the design process.

It is proposed that the process model is an example of good practice. The results of evaluation have shown that the procedures which were adopted in the development and administration of the case study programmes, resulted in the successful implementation of these schemes. It is therefore argued that the processes involved represent examples of good practice, and thus in turn the model which they comprise may be similarly described. In addition, the research recorded in section 9.3 above suggests that the design process, as implemented elsewhere in government, is similar in structure to that employed in DTI. Hence it is proposed that the process model is also fit to describe the process of designing and administering programmes as undertaken more widely in government. It is further observed that evidence of similarities in the design process as carried out in DTI, with the procedures adopted elsewhere in the public sector, lends further credibility to the model being described as a tool for general application.

Having gained confidence in the validity of the process model, which had provided a detailed description of the design process, the next stage of the research was to identify ways in which the process could be made better. This work was necessary to achieve the second research objective (b), described in chapter 1, section 1.2. The approach taken was to look at the mechanisms involved in

each component and element of the design system, and to investigate where and how improvement measures could be introduced. The following chapter, chapter 10, describes this phase of the research work. Chapter 1, section 1.2 also described the third research objective (c), which was concerned with developing proposals for a set of good practice guidelines to be made available to officials engaged in the design process. This topic is discussed in chapter 10, sections 10.4.2 and 10.4.3.

CHAPTER 10

IMPROVING THE PROCESS

10. IMPROVING THE PROCESS

10.1 Introduction

10.1.1 Background

Chapter 8 described the function of 'Evaluation and Feedback', and completed the exercise of mapping the design process. A comprehensive description of the complete process had been obtained. Thus the fourth research question which was concerned with understanding the support process, was seen as having been answered. It was concluded that in describing the process, a contribution to knowledge had been made and the first research objective (a) thus achieved (see chapter 1, section 1.2).

Chapter 9 discussed the testing of the process model using the five case study examples, which are described in appendices D to H. Chapter 9 concluded that the structure of the design process, as defined by the model, fitted that described in the case studies thereby suggesting the model to be credible. Having developed a plausible model, the purpose of this chapter is to satisfy the second research objective as described in chapter 1, section 1.2, which was stated as follows:

b) To exploit the findings of research to identify ways in which the design process can be improved to become more efficient and effective, such that value for money is increased.

Chapter 1, section 1.2 also proposed a third research objective (c), which was stated thus:

c) As part of achieving objective (b) to develop proposals for a set of good practice guidance for inclusion in a future *Handbook for Programme Design and Operation.*

Chapter 1, section 1.2 described the symptoms of possible problems. These centred around the observation that DTI and the remainder of government were not making best use of the corporate

knowledge base in programme design. Difficulties, it was suggested, lay in accessing corporate knowledge, which resides principally in peoples' heads, and in a plethora of programme evaluation reports. It was therefore difficult for people to learn from each other's experiences.

Chapter 3, section 3.2.3 helped confirm the existence of problems. Studying the literature had revealed policy mistakes to have been observed. It was proposed that problems were attributable to the structural changes within the Civil Service which have taken place in recent times. These have contributed to making access to expertise difficult, as staff are moved out of their former policy making roles, or lost altogether through reductions in staffing. The ability of policy makers to create effective policies was in consequence considered to be restricted. The evidence of problems lends value to achieving the research objectives (b) and (c), as they are concerned with identifying strategies for improvement. Thus the fifth research question proposed in chapter 1, section 1.6 in pursuit of realising these objectives, was seen as a sensible question to ask. The question was stated as:

(v) "In what areas may improvements be introduced and what should those improvements comprise"?

Chapter 3, section 3.8.3 identified several, specific questions to be answered as part of responding to the fifth research question. They were:

(a) "how should departments exploit Knowledge Management to become learning organisations, and to help this happen, and specifically how to:

(b) employ knowledge management such that officials can tap into each others experiences in designing support policy,

(c) present evaluatory findings to the design process,

(d) use benchmarking techniques to import good practice employed elsewhere,

(e) identify solutions for resolving the specific problems identified with DTI's File Management System, that is, the potential loss of files with time, and difficulties surrounding file access"?

The aim of this chapter is to provide answers to the fifth research question, responding to the specific points (a) to (e) above. Two approaches were adopted. The first was to examine the detail of programme design as recorded in the mapping process (that is what happens in practice) and to then investigate how well current guidance provided to officials supports them in each element of the task. A number of problems were found and proposals for their resolution developed. The second was to look at other areas of inefficiency, and see what additional arrangements could be introduced to further improve performance.

10.1.2 Identifying the Problems and Finding the Solutions

Review of the literature was helpful in determining how the author should conduct the task of discovering the nature of problems, and how issues identified could be resolved.
Chapter 3, section 3.4.1 proposed Business Process Re-engineering (BPR) as an appropriate approach for identifying the problem areas, and for finding ways in which to introduce changes for improvement. In section 3.4.2 it was proposed that problems could also be helped by DTI and other government departments becoming learning organisations through effective knowledge management. It was therefore suggested that ways of introducing Knowledge Management to raise the efficiency of the design and administration process, also be investigated.

Section 10.2 below begins the task of building proposals for improvement by first looking at the need for change. Section 10.3 develops the detailed strategy for identifying areas for betterment based on BPR. Developing proposals for change is discussed in section 10.4. Section 10.4.1 explains the reasoning behind focusing on the use of the *Innovation Budget Guidelines* as the principal source of

reference, and section 10.4.2 argues the rationale for a new set of guidance, the *Handbook for Programme Design and Operation*. Sections 10.4.1 to 10.4.3 examine the content of current guidance, against what is undertaken in practice. A number of gaps are identified, and suggestions made for how they can be addressed.

Section 10.5 studies the potential to employ Knowledge Management to raise the efficiency of the design process. As a pre-cursor to discussing the issues involved, section 10.5.1 first highlights the strategic importance of knowledge to organisations. Sections 10.5.2 and 10.5.3 then follow by explaining the differences between data, information, and knowledge, and within 'knowledge' the need to differentiate between its tacit and explicit forms. Section 10.5.4 then looks at how knowledge is created, with sections 10.5.5 and 6 explaining the roles of 'externalising' and 'internalising' knowledge. The difficulties associated with accessing tacit knowledge are highlighted.

The scene set, how knowledge management can be deployed in DTI and other government departments is discussed in section 10.5.7. How the proposed 'Design Handbook' will act as a vehicle for knowledge transfer is argued, and the efficacy of the approach discussed. Section 10.5.8 looks at other means of transferring knowledge, while section 10.5.9 describes the use of a knowledge database to improve access to corporate experience.

The need to up-date the knowledge base is highlighted in section 10.5.10, and the deployment of benchmarking to lift best practice from external organisations is described in section 10.5.11. Finally section 10.5.12 identifies problems with the present organisation of 'Evaluation and Feedback' within DTI, and makes recommendations for improvement.

10.2 The Need for Change

The rationale to consider change in the process of designing policy for industry support programmes in DTI, arises in the first instance from the now widely held belief that in today's rapidly changing

business environment, the majority of organisations, both private and public, must continually review their operations to maintain the UK's competitive position (Drucker, 1993, pp. 52-53; 1995, pp. 270-271; Peppard and Rowland, 1995, p. 25-38). The publication *Manufacturing into the Late 1990s*, a document prepared for DTI by the PA Consulting Group (PA, 1993, p. 6), refers to 'change' now being the key word for businesses. For PA, the need for change derives from firms having to respond to the market drivers, such as the global economy, technological developments, competitors, and demographic lifestyles and trends, (Peppard and Rowland, 1995, pp. 25-38). The market place is highly dynamic and competitive (Butler Group, 1995, p. 11), and "*achieving a consistently successful performance in such changing times is an enormous challenge*" (PA , 1993, p. 6).

A DTI internal report written for the department's Knowledge Management Unit (KMU), acknowledges that DTI operates in a different sector to commercial organisations, but argues that nevertheless, "*in the challenges which it now faces, it has much in common*" DTI (1999, p. 4). Traditional organisations, of which government departments are an example, have built their structures around functions and hierarchy (Obolensky, 1994, pp. 7-8; Peppard and Rowland, 1995, p. 5-6). While serving organisations well in the past, they have proved slow in responding to the changing needs of today's volatile, business environment. Drucker (1993, p. 142) highlights the urgent need to make government effective. Peppard and Rowland (1995) refer to "*the notion of 'market forces' is no longer a stranger to most public sector organizations in the developed world*" (p. 31).

The need for change to meet the challenge presented by the modern business environment is well recognised within Whitehall. The government white paper, *Modernising government* (Cabinet Office, 1999), in its "Forward by The Prime Minister", the Rt. Hon. 'Tony' Blair, states "*The Government has a mission to modernise - renewing our country for the new millennium*" (Cabinet Office, 1999, p. 4). The white paper continues "*We all want to deliver policies, programmes and services that will make us more healthy, secure and better equipped to tackle the challenges we face*" (p. 9). To achieve the

government's goals, the Paper emphasises the importance of modernising the way government works, including the way in which policies and programmes are devised.

Better policy making to ensure implementation of policies which deliver the outcomes which businesses seek is a primary objective for modernising government (Cabinet Office, 1999, p. 7, 9, 13, 18). The remit to help firms is echoed in the government's 'Competitiveness White paper', *Our Competitive Future: Building the Knowledge Driven Economy* (Stationery Office, 1998, p. 6), which refers to the government having a key role as a catalyst to strengthen the supply side of the economy. The design and introduction of support programmes forms part of the overall process of policy making. Harrington (1991) suggests the biggest opportunity for an organisation to improve its 'bottom line' comes from improving its business processes. Thus there exists the rationale to examine the design process, to identify potential areas where change could bring about policies which are more efficient, and more effective in raising the competitiveness of firms. Searching for ways to improve current arrangements is also consistent with 'policy' of long standing. Officials have a clear mandate to make best use of their resources, including the maximisation of VFM (HMSO (1982); RIPA, 1988). Introducing greater efficiency into the process is seen as benefiting government, through resultant cost savings brought by better use of resources (CCTA, 1994, pp. 1, 3-4).

10.3 Selecting the Strategy for Identifying and Solving Problems

Peppard and Rowland (1995, pp. 3-21) commend Business Process Re-engineering (BPR) for challenging many of the traditional assumptions on which organisations have been founded. For them, BPR is about seeking ways in which to introduce change into organisations so that they are better responsive to the changing needs of society. Peppard and Rowland (1995, pp. 18-21) view BPR a useful tool to examine current processes, and for bringing about step improvements in performance through subsequent redesign of those processes. BPR, they suggest, is synonymous with creativity and innovation (p. 163). For the government innovation is pivotal to improvement. The 'Competitiveness'

white paper states "*The Government must improve its performance by becoming more innovative*" (Stationery Office, 1998, p. 8).

Others support Peppard and Rowland's views. Davis (1996) refers to BPR as being: "*most helpful for improving the performance of recurring business procedures and activities*" (Davis, 1996, p. 69). The Butler Group (1995) view BPR as a response to demands for business change arising from today's "*highly volatile and competitive markets*" (p. 11). Braganza and Myers (1995, pp. 1-2) identify BPR as a key change initiative for achieving improvements in the running of both public and private sector bodies. CCTA (1994) considers BPR as being "*particularly appropriate for government organisations*" (p. 3). Braganza and Myers (1995, p. 1) highlight the pursuit of better VFM as the primary objective for both groups of organisations in undertaking such initiatives.

Peppard and Rowland (1995) usefully define BPR as follows:

"*BPR as an improvement philosophy. It aims to achieve step improvements in performance by redesigning the processes through which an organization operates, maximizing their value-added content and minimising everything else. This approach can be applied at an individual process level or to the whole organisation*" (p. 20).

The Butler Group (1995) concur, stating "*Business Process Re-engineering is primarily concerned with the need to investigate business processes and find out whether they can be improved*" (p. 11). They additionally point to it being possible to undertake BPR at different levels within an organisation. BPR projects can extend throughout an enterprise or focus on resolving issues in a specific, problem area. The process of designing programmes is an example of the latter, being one of a number of functional areas within DTI. The advantage of BPR is seen as stemming from its holistic nature, which emphasises the role of 'processes' within the context of the organisation. Thus BPR, it is argued, is able to draw on the body of knowledge which has developed from applying the previous approaches, such as Total Quality Management (TQM), (Obolensky, 1994, p. 7; Peppard and Rowland, 1995, p. 13).

Braganza and Myers (1995, pp. 8) cite cost reduction in 'the process' and the shortening of cycle times as principal reasons for organisations committing to BPR projects. They point to organisations experiencing significant benefits from implementing BPR, with some achieving 150% improvement in 'on-time' deliveries, and processing times down from typically 25 days to one half of a day. These improvements are significant, and are similar in nature to those sought by policy designers. As needs change ministers and senior staff can set tight deadlines for the delivery of new policies, seeking early introductions of new initiatives. Government also seeks VFM in every aspect of the policy process (HMSO, 1982), including that of developing programmes. The potential to achieve significant benefits from applying BPR as demonstrated by the above examples, and the suitability of the approach for use in public sector applications (CCTA, 1994, p. 3; Braganza and Myers, 1995, p. 1) suggested that application of BPR would be a viable strategy for discovering ways in which the current design process could be improved.

However Peppard and Rowland (1995, pp. 155-161) highlight the need to consider the role which existing processes should play in BPR. This, they argue, is a central area of contention for many. Hence Peppard and Rowland suggest certain points require consideration in developing BPR strategies. Should existing processes form the basis for the new redesigned actions, or, in embarking on BPR, should organisations start with a completely 'clean sheet'? They classify these two broad strategies for BPR into the categories of 'Systematic Redesign' and the 'Clean Sheet Approach'. The former generally involves incremental modification of existing processes. The latter is normally associated with radical change resulting from the implementation of new processes, whose design is not derived from the 'old'.

Many favour the radical approach (Braganza and Myers, 1995, p. 2). For example Hammer (1990, pp. 104-105) argues that re-engineering cannot be planned and accomplished in small cautious steps. He

proposes that BPR is "*an all-or-nothing proposition*" (Hammer, 1990 p. 105) to radically redesign business processes to achieve dramatic improvements in their performances. He continues:

"*at the heart of re-engineering, is the notion of discontinuous thinking - of recognizing and breaking away from the outdated rules and fundamental assumptions that underlie operations. Unless we change these rules, we are merely rearranging the deck chairs on the Titanic*",

(Hammer, 1990 p. 107).

However others take a different line. Peppard and Rowland (1995, p. 157) records that whilst historically clean sheet strategies have been the preferred approach for many 'Western' companies, the failure rate of these radical projects has been high. The Butler Group (1995, p. 11) points to various surveys of BPR projects, which show that over 60% of radical projects fail. Peppard and Rowland (1995, p. 157) suggest the failure rate could be as high as 70%, whilst Obolensky (1994, p. 7) reports others considering the figure to be closer to 80%. Peppard and Rowland (1995, pp. 157-160) contrast these poor results with the success of strategies involving incremental change, where firms, particularly Japanese enterprises, have realised significant gains in performance. The greater risk associated with clean sheet projects, which take little or no account of previous experience, is proposed as a primary cause.

In deciding whether an incremental or radical change approach should be adopted in developing proposals for improving the policy design process, Sir Robert Armstrong, former Secretary of the Cabinet and Head of the Home Civil Service, provides some useful advice. When giving a presentation at a seminar on the "Future Shape of Reform in Whitehall" (RIPA, 1988), he informed delegates (including members of the Civil Service, politicians, and people from other parts of the public sector, including academia) of the need, when reviewing change in the Civil Service, to bear in mind the following:

"that change has to be accommodated within the continuing business of Government which will not wait. This (the Civil Service) is not a car which you can take off the road while you change the wheels or fit a new distributor. The people being asked to deliver management changes are the same people who are also and at the same time tasked to deliver a day-to-day provision of services to the public",

(RIPA, 1988, p. 12).

Sir Robert continued, advising that the nature of the Civil Service dictates that the process of management change in the public service must be inevitably gradual.

However other considerations also suggest an incremental approach is more appropriate. The process of programme development in DTI has evolved over many years, with many of the current schemes having their origins in programmes launched in the 'Mid-seventies (DTI, 1983, paragraph 1.1, 1985, paragraph 1.14). Examination of DTI's evaluation reports of programmes operated in the Eighties and Nineties shows that whilst schemes have not universally attained high levels of success, they have nonetheless been generally regarded as representing reasonable VFM. While for the reasons discussed earlier, potential for improvement is seen, current levels of performance are in the author's opinion sufficient to render radical change unnecessary. Peppard and Rowland argue from another 'stand point'. They contend that " *ignoring existing processes is high risk, not least because it fails to build on existing knowledge and experience which has been built up over time and risks repeating the mistakes of the past*" (Peppard and Rowland, 1995, p. 156).

Few companies, they argue, succeed in introducing entirely new processes into existing operations. New procedures often bear little relation to the actual tasks undertaken, making it difficult for people to relate to the new designs, with the consequence that change projects 'grind to a halt'.

The Butler Group (1995, pp. 11, 13) reinforces this view. They suggest radical change 'big-bang' projects should not be contemplated, strongly recommending instead that firms adopt an evolutionary, step by step approach to BPR. Human beings they argue, are poor at handling complexity (see also

chapter 3, section 3.5). 'Big-bang' projects, they continue, typically create 'thousands' of variables, giving the project manager no chance of success, because he or she will lose. For the Butler Group (1995, p. 13), many serious errors of judgement in the past could have been avoided if the business managers concerned had better understood the implications of complexity.

In contrast, evolutionary BPR projects plan out best, because things are taken a step at a time (Butler Group, 1995, pp. 13-14). However, the Butler Group is quick to point out that systematic redesign while a more cautious approach, does not prevent goals for success being set high. The author further observes that the rationale for adopting an incremental approach displays similarities with 'incrementalism' in programme development, where the complexity of the issues involved prevents resolution of all the policy issues in one go, (see chapter 3, section 3.5). Taking all of the above considerations into account, systematic redesign of the development process involving incremental change appeared the most befitting strategy for analysis.

The decision taken to adopt a systematic approach to re-engineering the design process, the next step was to identify a structure for research work. Peppard and Rowland (1995, pp. 45-46) suggested the way forward. They propose organisations are built on the three main pillars of the processes, people, and technology. In designing new processes these elements must be considered in turn, in the light of 'business' requirements. The following text (section 10.4) concentrates on 'process', and records the examination of the current design system, identifying problems and developing proposals for their resolution. These proposals centre around improving current guidance available to officials. Section 10.5 investigates the introduction of 'Knowledge Management', which is about people (Brooking, 1999, p. 139), and 'Technology' to increase efficiency in the design process.

10.4 Re-engineering of the Process of Designing Policy for Support Programmes

'Systematic re-design' involves identifying and understanding the existing processes, then analysing them systematically to create new processes (Peppard and Rowland, 1995, p. 156). As the first step in BPR, the Butler Group (1995, pp. 18-20) emphasise the importance of gaining a thorough understanding of the current process. For them this is not only important in providing a sound basis upon which to develop proposals for change, but also to allow original processes to be re-installed in the event of mistakes. In helping to understand and record the current process, Peppard and Rowland agree, recommending that a process map be constructed. For mapping purposes they report that "*the IDEF0 mapping standard is frequently used for BPR initiatives*" (Peppard and Rowland, 1995, p. 172). Chapters 5, 6, 7 and 8 of this thesis described the use of IDEF to analyse and map the current design process, and documented the results of this work.

10.4.1 Examination of Current Guidance

The current process having been analysed and mapped, the next step was to identify those areas in need of improvement. The observations of the Butler Group (1995) usefully suggested a starting point. They propose that in most organisations the current processes will have been built up over a period of time, and are unlikely to be documented. BPR, they suggest, often provides the first opportunity to analyse and formally record the extent of existing systems. As observed above, the situation in DTI is atypical, the design process having developed over many years and, as far as the author is aware, not the subject of a previous BPR exercise. The observations of the Butler Group suggested that the author begin by examining current documentation used in the design process, to discover how well procedures are described. Chapter 3, section 3.3.1 showed that there are three principal sources of reference which provide guidance to officials in the design and introduction of support programmes. They are the Treasury 'Green Book' (HMT, 1997), the DTI *Finance Handbook* (DTI, 1996b), and the successive releases of the *Innovation Budget Guidelines* (DTI, 1987, 1988, 1992, 1996a, 1999a).

From the viewpoint of scheme development and operation, the DTI *Finance Handbook* is the first (top-level) source of reference for officials. However the author's own experience, coupled with findings derived from conversations with colleagues, showed the *Innovation Budget Guidelines* to be the most widely consulted source of reference. Study of the design process revealed several reasons contributing to their greater use. Firstly, copies of the guidelines are issued to every official who is concerned with developing programmes to be funded out of the Innovation Budget. In contrast, access to the Treasury guidelines and DTI's *Finance Handbook* is more restricted, with circulation of copies mainly limited to the departmental 'Finance Officers'. These officials work in the management units of each directorate, and oversee programme and other spend. Thus other officials wishing to reference the Treasury guidance and the *Finance Handbook* must make a specific request to the holders in order to read them. In talking to colleagues, the author found instances of officials not even being aware of the existence of either the 'Green Book' or the DTI *Finance Handbook*! Lack of awareness of these documents is, in the author's view, due largely to limited distribution.

Secondly, that portion of the guidance which is directly relevant to preparing ROAME Statements in the 'Green Book' and the *Finance Handbook* is not as comprehensive as that presented in the *Innovation Budget Guidelines*. The 'Innovation Guidelines' is dedicated to supporting officials in the design process, and provides a higher level of detail and explanation in those aspects directly connected with programme development. As one very experienced official engaged in developing programmes under the Innovation Budget remarked to the author, "*I would not look in the 'Green Book' or the 'Finance Handbook' for guidance in building a case for support*". Another colleague reported that while he was aware of the *Finance Handbook*, he regarded it as an 'accountancy document', and therefore had not referred to it in scheme design. For him the *Innovation Budget Guidelines*, with their content directed at informing project officers (those officials engaged in programme design and operation), represented his primary source of reference [Interview 11]).

The *Innovation Budget Guidelines* were found to be the only example of their type, being specific to the Innovation Budget. In their present form they have evolved over a period of some thirteen years. During this time numerous suggestions for improvement have been received from 'users', and incorporated into the guidance (DTI, 1992, p. i). The author has found the document to be 'well thought of by officials'. Conversation with a colleague (Dr. Bentley, a PR11 in DTI's SBS) revealed the guidelines to be employed as a 'best practice' source of reference in designing schemes funded from within other budget areas. This seems a reasonable practice. Much of the guidance is generic to both R & T and advisory programmes, for example the need to demonstrate market failure, the presence of 'constraints' such as EC State Aids, government policy, and the approval and administration procedures. Given the more detailed nature and widespread acceptance of the *Innovation Budget Guidelines* as the primary source of reference in the design process, it seemed sensible that in improving guidance the author should build on the content of these guidelines. In looking at existing documentation, study began by focusing on deficiencies in this specific set of guidance.

10.4.2 Proposals for a Handbook for Programme Design and Operation

Poor access to the Treasury's 'Green Book' and the DTI *Finance Handbook* constitutes a problem, as these guidelines provide important information on the wider issues surrounding scheme design. For example they detail what may be 'legally' funded, by explaining the role of Acts of Parliament. DTI's guidance provides administrative advice on how officials should deal with such situations as company insolvency. As an initial step, it is proposed that a summary of the roles of the HM Treasury guidance and the *Finance Handbook* be added to the *Innovation Budget Guidelines*, explaining their contents and why and when officials need to refer to them. Cross referencing between documents should also be provided to ensure ease of access to required sections in each set of guidance.

To reflect the wider content of the resultant guidance, and to differentiate it from the circulation of previous documentation, it is proposed that this revised advice receive a new title, *The Handbook for*

Programme Design and Operation. The title, it is hoped, would help officials recognise the new guidance as a 'definitive' document on the subject of scheme design, providing ready access to advice on the broad range of issues surrounding the design process. Chapter 1, section 1.2, introduced the idea of the 'Design Handbook' and suggested it include examples of good practice in programme design. The third research objective (c) was hence set to develop proposals for a set of good practice guidance for inclusion in the manual.

The observations made in section 10.4.1 above suggest that the content of the *Innovation Budget Guidelines* is representative of good practice. They have a proven track record in the field, having been employed over a number of years and with their on-going development based on 'user feedback'. Similarly it can also be argued that the financial procedures presented in the *Finance Handbook* also represent good practice in the administration of public funds. It is therefore suggested that in adding a summary of the *Finance Handbook* to the 'Innovation Guidelines', the first step has been taken towards meeting objective (c). The following sections take the process of developing proposals for a comprehensive set of good practice guidance a stage further, by examining the *Innovation Budget Guidelines* against 'practice in the field', to identify and address gaps in its provision.

10.4.3 Examination of Deficiencies in the Innovation Budget Guidelines

The approach taken was to critically examine how well the guidelines supported the design task, for both R & T and advisory schemes. For each stage of the design process as identified in chapters 5, 6, 7, and 8, the descriptions provided in the *Innovation Budget Guidelines* of the tasks to be conducted was compared with the actual work undertaken in practice. A number of gaps in the guidance were identified. It is proposed that in each instance gaps in the 'Innovation' guidance can be filled by providing in the proposed 'Design Handbook', descriptions of what officials do in practice, as identified in building the process model. Based on inspection of DTI's Functional Directory (DTI, 1999d), attendance of government meetings, and discussion with colleagues, the target audience for the new handbook is estimated as being approximately 400 people.

The process of programme design and administration has itself developed over many years, and many evaluations of schemes conducted (see appendix A, pp. 2-7). While many of these reports make recommendations for improvement, none, as far as the author is aware, have regarded any intervention to have failed through poor design (for some examples see appendix K, pp. 158-187, which discusses good and poor practice in terms of the findings made in programme evaluation reports). These observations provide a level of confidence that the mechanisms adopted in design and administration represent examples of good practice.

However to help ensure that such confidence was not misplaced, and thus the design model representative of good practice, the case study examples contained in appendices D to H were evaluated in terms of their overall performance. On balance these schemes achieved a good set of outcomes. Good results, it is argued, serve to demonstrate the efficacy of the mechanisms adopted in their design and implementation. Since they are representative of the overall design process (see chapter 1, section 1.1), it is further suggested that the approaches described in the design model (research of the model focusing on the case study examples) are by implication representative of good practice generally. The evaluation of the case examples is described in appendix K, pp. 161-187, which calls on a number of DTI evaluation reports in reaching conclusions. By filling gaps in the current guidance with practice derived from the design model, it is proposed that the new 'Design Handbook' would contain a comprehensive set of good practice guidance to officials, and thus satisfy the third research objective (c).

Chapter 8, section 8.8 found the main stages of the process and their component parts to be as follows:

(i) **Issue Identification** (chapter 6)

Conception and Validation of Programme Ideas (chapter 6, section 6.2)

Develop Programme ROAME statements (chapter 6, section 6.3)

ROAME Approval (chapter 6, section 6.4 and 6.5)

(ii) **Programme Implementation** (chapter 7)

(iii) **Evaluation and Feedback** (chapter 8, sections 8.2-8.8)

Chapter 9 described the testing of the above model. Study of the development and administration of the case study examples showed the structure of the overall process to conform with that predicted by the model. By way of demonstrating the integrity of the model, chapter 9 provided instances of action being taken in each of the component stages, (see section 9.2.1 the Enterprise Initiative (EI), sub-section 9.2.2.1, the General Industrial Collaborative Projects (GICP) programme, sub-section 9.2.2.2, the Small Firms Merit Award for Research and Technology (SMART) scheme, sub-section 9.2.2.2, the Support for Products Under Research (SPUR) initiative, section 9.2.3, the Consultancy Initiatives (CI), section 9.2.4, the Managing into the '90s programme (M90s), and section 9.2.5, the Manufacturing, Planning and Implementation (MPI) programme). The ability of the *Innovation Budget Guidelines* to support the design process in each of these areas was examined. Appendix I, pp. 142-153, records the detail of the work undertaken, and the recommendations made towards achieving a comprehensive set of design guidelines. The principal recommendations include:

10.4.3.1 Issue Identification

- Officials should be better apprised of the role of Acts of Parliament, in particular how the Science and Technology and Industry Acts empower the Secretary of State to support businesses. Their relationship with what officials can and cannot fund should be explained (appendix I, section I.2.1, p. 144).

- White papers are the primary source of reference for statements describing government policy, and clear advice needs to be added to guidance for officials to consult these documents, to ensure programmes are designed to be conformant with policy (appendix I, section I.2.1, pp. 144-145). Guidance should also highlight the importance of understanding the individual priorities of ministers, in seeking to design programmes that are likely to receive their support, (appendix I, section I.2.1, pp. 145-146).

- An alternative definition of market failure, which makes explicit that the rational for government intervention relies on there being present in the market factors that inhibit firms from taking good practice actions, is proposed (appendix I.2.1, p. 145). Categories of market failure pertaining to advisory programmes should also be provided (appendix I, section I.2.1, p. 145).

- It is suggested that officials' attention should be drawn to the process of conceiving and validating ideas, as it is fundamental to officials in making timely responses to changing support requirements. Drawing on the knowledge recorded in chapter 6, section 6.2, guidance should describe how initial thoughts are generated, and then developed into outline proposals and validated to test their credibility (appendix I, section I.2.2, pp. 146-147).

- The steps involved in developing programme rationale, as described in chapter 6, section 6.3.2, should be specifically identified. This would help officials in understanding the extent of the process. Guidance on what needs to be undertaken within each step, would be provided. In developing rationale, current guidance is weak in informing officials as to 'how' they identify the presence of market failures. Drawing on the findings of chapters 5 and 6, it is proposed that the sources of evidence available to officials and how they are accessed, be included in the 'Handbook for Programme Design' (appendix I, section I.2.3, pp. 147-149).

- Guidance currently says little on what delivery mechanisms may be employed to negate market failures. It is suggested that the performance of schemes could be enhanced by providing officials with examples of the good practice delivery mechanisms which have successfully been employed in the past. In support of fulfilling this requirement, appendix K identifies some examples where the opportunity is also taken to identify instances of good practice in the related area of programme administration. For completeness it is proposed that examples of bad practice also be given, to help prevent previous mistakes being repeated (Brooking, 1999, p. 5). It is argued that such information, coupled with better guidance on how to determine market failure, would result in the introduction of programmes which, in their design, are more likely to meet the needs of firms (appendix I, section I.2.3, pp. 148-149).

- Chapter 6, section 6.5. Section 6.5 discussed some of the mechanisms by which officials can help 'make the ground fertile' for the approval of schemes, and it is recommended that details of actions which officials can take to help ensure acceptance of proposals be included in guidance towards increasing efficiency (appendix I, section I.2.4, p. 149).

10.4.3.2 Programme Implementation

- Chapter 7, section 7.2, discussed 'Appraisal', and it was shown that certain checks such as the availability of resources, and testing the criteria which contribute to the demonstration of the condition of additionality, are essentially common to projects in R & T programmes and advisory schemes (DTI, 1996b, section 9.3). However, significant differences do exist in the administration of the appraisal function between the two types of programmes. For the former, appraisal is normally undertaken by officials, in the latter it is usually carried out by external personnel. It is proposed that in the new guidelines officials be reminded that the additionality criteria apply 'across the board' when considering applications for financial support, but specific guidance on the how the other elements of the appraisal task are performed in each of the two cases, be described, (appendix I, section I.3.1, pp. 149-150).

- Chapter 7, sections 7.3, 7.3.1 and 7.3.2, examined the monitoring function in programmes, and illustrated how similarly to the administration of 'Appraisal', officials tend to be responsible for project monitoring in R&D projects, but in consultancy schemes the task is normally undertaken by non civil servants. As in the case of appraising projects, this distinction needs to be made clear in guidance, and the procedures to be adopted for both classifications of programme, detailed. It was also considered helpful to include a section in the 'Handbook' dedicated to describing the mechanisms adopted in the monitoring function (see appendix I, section I.3.2, p. 150).

- Chapter 7, section 7.6.1 highlighted that officials often quote ROAME objectives and programme eligibility criteria in ITT specifications to help ensure policy conformance. Furthermore, the proposals of successful bidders often form the basis of contractual agreements. These practices are not highlighted in current guidance. Guidance should therefore be enhanced accordingly to advise of these needs (see appendix I, section I.3.3, p. 151).

- Chapter 7, section 7.6.1 also showed officials to write non-prescriptive ITT specifications, which do not assume a preconceived approach. This approach is not detailed in the 'Innovation Guidelines', and the need for tender specifications to be non prescriptive should be stated and explained in the new 'Design Handbook' (see appendix I, section I.3.3, p. 151).

- The requirement to formally promote programmes, and subsequently to officially announce their closure, was discussed in chapter 7, sections 7.7 and 7.8. Such provisions are not adequately discussed in the current guidance, and it is recommended that these omissions be made good in the proposed handbook. Chapter 7, section 7.7 detailed a number of promotional activities, which have been used successfully in the past. These examples should be included in the new guidance, along with a discussion of the procedures for closure, detailed in section 7.8 (see appendix I, section I.3.4, p. 151).

10.4.3.3 Evaluation including Feed-back

No changes were recommended. Guidance on 'Evaluation' provided in the supplementary guidelines *Guidance on the Preparation of Evaluation Plans* (DTI, 1999c), is considered as sufficiently comprehensive for officials to draw up effective evaluation plans for both R & T and advisory programmes (see appendix I, section I.4, p. 152).

10.4.3.4 A Process Map

Blosch (2000, pp. 13-14) highlights the importance of providing people with a map of the process in which they are engaged, to help inform them of its make up and scope. Inspection of the successive versions of the *Innovation Budget Guidelines*, shows them not to provide such a map. It is therefore proposed that the flow chart described in Figure 8.3 (see chapter 8, section 8.8) be presented in the proposed *Handbook for Programme Design and Operation*, with details of the tasks to be undertaken within each stage described. It is further suggested that the information required by officials at each stage of the process, also be placed in the new handbook, (see appendix I, section I.5, p. 152).

10.4.3.5 Process Drivers

Appendix I, section I.6, (pp. 152-153), suggests that it is important for people to understand the factors which drive the process of programme design. Three factors are identified, these being policy directives given in white papers, the priorities of individual ministers, and officials detecting new problems to be resolved by tracking changes in the market. These factors should be described in the new handbook, preferably in an introductory section.

10.5 The Application of Knowledge and Technology

Section 10.3, above, proposed organisations are built on the three main pillars of the processes, knowledge (people), and technology. Section 10.4, immediately above, studied the current process and found present guidance was failing to provide adequate advice in certain areas of programme design. These deficiencies were discussed, and proposals presented for how a 'Handbook for Programme Design and Operation' containing a more comprehensive set of guidance should be developed. Whilst it is considered that recommendations for changes in guidance have the potential to significantly benefit the design process, it was decided to investigate other possibilities for bringing about improvements in the process.

Chapter 3, section 3.4.2, introduced the concept of knowledge management (KM), as an avenue to explore in attempting to discover ways of improving the design and administration of programmes. Knowledge, it was proposed, is the key resource for individuals and the overall economy, but can only be productive when it is integrated with a task. Hence it was suggested that the purpose and function of every organisation is to put knowledge to work on its processes. The importance of knowledge, skills, and creativity in helping to realise high productivity and the provision of high value in goods and services, is recognised by government. It was argued that in policy making, the government itself requires to be as innovative and creative as the private sector, and that such creativeness and innovation is viewed as fundamental to civil servants delivering better value from public assets. In support of achieving better value, government needs to make best use of peoples' talents, and to also learn from experience in policy making.

Senge had developed the themes of making full use of peoples' capabilities, and the learning process. He emphasised that "*The organizations that will truly excel in the future will be the organizations that discover how to tap people's commitment and capacity to learn at <u>all</u> levels in an organization*" (Senge, 1990, p. 4). Research it was suggested, should therefore investigate what features of knowledge management are required to help officials tap into each others experiences, by way of

helping departments to become learning organisations. The following sections describe proposals for how knowledge management might be applied to introduce a learning culture into the Whitehall departments. As an introduction to the topic, the knowledge theme is first developed.

10.5.1 Knowledge is Key

Drucker (1993, pp. 38-41; 1995, 76-77) emphasises the particular importance of knowledge for society, now and in the future. He suggests that for society, it is knowledge rather than capital, natural resources, or labour, that represents the 'means of production', that is the basic economic resource (Drucker, 1993, pp. 38-39). Nonaka and Takeuchi (1995, p. 7) refer to the realisation in the Western Economies of the importance of knowledge, both within companies and governments. The UK Government is amongst those recognising this importance. The government's 'Competitiveness White Paper', *Our Competitive Future: Building the Knowledge Driven Economy* (Stationery Office; 1998, p. 6), cites knowledge as representing the UK's distinctive capabilities, rather than raw materials, land, or cheap labour.

Knowledge is key because it provides the basis for innovation from which organisations derive their competitiveness (Nonaka and Takeuchi, 1995, p. 6). Continuing, Drucker (1993, p. 170) argues that increasingly the social and economic success of a country or a company is determined by the productivity of knowledge. He refers to knowledge being applied systematically to identify what knowledge is required, and what has to be done to apply knowledge effectively; that is systematic innovation (p. 38). Nonaka and Takeuchi (1995, p. 6) describe how innovation arises from the utilisation of knowledge by employees. Hammer (1990, p. 107) sees innovation as pivotal to success in the 1990s', and innovation is seen by the UK Government as germane to improvement in Whitehall departments. The Competitiveness White Paper states:

"*The Government must improve its performance by becoming more innovative*",

(Stationery Office, 1998, p. 8).

A further consideration is the pivotal role assigned to DTI in knowledge management within government. The government's Competitiveness White Paper (Stationery Office, 1998, p. 61) refers to DTI being "*a champion of innovation*" and will play a major part in the renewal of the public service. It states:

"*DTI will establish a Knowledge Management Unit. The new unit will pursue projects to the Department* [i.e. DTI] *at the forefront of knowledge management*",

(Stationery Office, 1998, p. 61).

The work of the Knowledge Management Unit is intended to help bring about the necessary "*changes to the organisation, technology, management and culture of government*" (p. 61). Therefore it followed that examining the ways in which knowledge may be applied to improve the design of support policy, would be a worthwhile line of investigation. Such research was seen as having the added benefit of being directly supportive of government policy. It was also thought that emergent proposals would be of relevance to the work of the Knowledge Management Unit, making a useful contribution to its efforts.

10.5.2 Data, Information, and Knowledge

It is important to recognise that not only knowledge, but also data and information are fundamental to the organisational processes Brooking (1999, p. 5). How all three are brought to bear on processes is germane to improvement, but it is important to differentiate between them as people often use these terms interchangeably (Nonaka and Takeuchi, 1995, p. 8, ; Marchand, 1998, p. 253; Brooking, p. 4, 1999). For Brooking, data can be described as facts *presented without a context* (p. 4). Marchand (1998, p. 255) agrees referring to data as being 'context free', and always shareable among people

because recipients need not interpret them in a shared context. Examples of data are lists of numbers written on a page.

In contrast information is never context free (Marchand, 1998, p. 255; Brooking, 1999, p. 4) or 'value neutral'. Information is data presented in context. Its transfer relies on the sharing of 'context', in order that people may interpret the 'intelligence' they receive in the way intended by the originator. An example of information would be a house number associated with the name of a road. However, knowledge, Brooking argues, "*is information in context, together with an understanding of how to use it*" (Brooking, 1999, p. 5). Marchand suggests "*most scholars recognise knowledge as different from, but directly linked to information*" (Marchand, 1998, p. 253). For Marchand, "*'to know' means not only to understand or to believe, but to apply one's knowledge*" (p. 255). Brooking gives as an example of knowledge, information about street drainage derived from using a drawing, and understanding how the placement of new houses is related to water flow. Thus for Brooking, "*Knowledge = Information in Context + Understanding*" (Brooking, 1999, p. 5).

10.5.3 Explicit and Tacit Knowledge

Specialists in the field of knowledge management differentiate between two types of knowledge, these being 'Explicit Knowledge' and 'Tacit Knowledge'. CEST (1999) usefully defines the two categories of knowledge as follows:

"*Explicit Knowledge: Knowledge that can be easily expressed in words and numbers, processed by a computer, transmitted electronically, or stored in a database, and thereby communicated and shared;*

Tacit Knowledge: Knowledge which is not easily expressible, highly personal and hard to formalise, difficult to communicate and share",

(CEST, 1999, p. 7).

Explicit knowledge is clearly visible and may be easily shared among individuals. Explicit knowledge CEST (1999, p. 6) suggests, may be regarded as 'know how' which has been 'frozen' into an artefact such as a document or a database. For Brooking (1999, p. 49), explicit knowledge is knowledge which can be inspected by another, such as explanations of business processes which are written down in manuals, and other documents. Instructions showing how to assemble furniture are quoted as an example of recorded explicit knowledge. Knowledge documented in any form is 'explicit' (Brooking, 1999, p. 49). More broadly tacit knowledge is regarded as an entity which is not manifested in the form of an artefact CEST (1999, p. 6). For Brooking, "*Tacit Knowledge is knowledge which has not been made explicit*" (Brooking, 1999, p. 51).

10.5.4 Knowledge Creation

Nonaka and Takeuchi (1995, pp. 3-16) suggest Japanese companies have been more successful than their Western counterparts "*because of their skills and expertise at 'organizational knowledge creation'*" (Nonaka and Takeuchi, 1995, p. 3). Organisational knowledge creation is seen as key to the ways in which Japanese companies innovate, which in turn has given rise to them achieving a competitive edge. Organisational knowledge creation is explained as the combined process of converting tacit knowledge into explicit knowledge so that others can share it, and then back into the tacit form by those to whom it has been passed.

However the first stage in the process is difficult. Tacit Knowledge, Marchand (1998, p. 255) argues, differs from information in that it resides in the heads of individuals. Nonaka and Takeuchi (1995, pp. 8-10) explain how this poses problems, owing to the difficulty of accessing tacit knowledge directly. Whilst explicit knowledge is expressed by words and numbers, and therefore may be disseminated using conventional techniques (e.g. in books or by electronic mail), tacit knowledge is not readily visible to others. Tacit knowledge it is argued "*is highly personal and hard to fomalize, making it difficult to communicate and share with others*" (Nonaka and Takeuchi, 1995, p. 8). They emphasise that it is something which is "*deeply rooted in an individual's experience*", and being subjective and

intuitive in nature makes tacit knowledge difficult to process and broadcast. Knowledge management and proposals for how it could be implemented within DTI, is discussed in this chapter, section 10.5.7 below. However before investigating what procedures should be introduced, it is helpful to discuss the principles involved in transferring individuals' tacit knowledge.

10.5.5 Externalisation of Tacit Knowledge

Nonaka and Takeuchi (1995, pp. 64-70), and Marchand (1998, p. 257) highlight the inevitable need for individuals' knowledge to be initially expressed in artefacts such as documents, in order that their know how can be disseminated and hence shared by all members of an organisation. Nonaka and Takeuchi (1995) continue, by showing how tacit knowledge can be expressed explicitly in such artefacts. They argue that tacit knowledge has to be first codified into the explicit form, and refer to this transformation process as 'externalisation'.

10.5.6 Internalisation of Tacit Knowledge

Having rendered tacit knowledge explicit, its value will only be realised once disseminated and absorbed by those who have need of it (Nonaka and Takeuchi, 1995, p. 69). They refer to this second stage of knowledge transfer as the process of 'internalisation'. Internalisation is the process whereby the recipient of explicit knowledge merges this knowledge into his own tacit knowledge, for his or her direct use.

10.5.7 Application of Knowledge Management in the Process of Designing and Administering Support Policy

To help determine the way in which the design and administration of programmes might be improved, the author thought it would be useful to identify the areas where the application of knowledge management could bring advantage, and simultaneously where the potential problems lie. Usefully,

the consultancy company KPMG have commissioned a survey of organisations to assess the take up of KM by businesses (KPMG, 2000). The survey was conducted among chief executives, finance directors, marketing directors, and people with specific responsibility for KM in their companies, among 423 organisations having a turnover exceeding $347 million a year (p. 5). The sample was chosen because "*organizations of this size have the greatest need to implement KM initiatives, have possibly the greatest capability and resources to do so, and potentially can reap the greatest benefits*" (p. 5). The author suggests that KPMG's observations apply to DTI, the department employing around 7,700 permanent staff (not including the people employed in Companies House and the Patent Office), (Stationery Office, 2000, p. 194), and may thus be similarly classified as a larger organisation. Of the respondents, 64% were found to have a KM strategy (p. 7).

Inspection of the KPMG (2000) report demonstrates the benefits in terms of improved competitiveness, which can accrue to organisations through the deployment of knowledge management, and how these benefits arise. Interestingly their research found that 79% of the overall respondents considered KM as potentially having an 'extremely significant', or a 'significant' role in improving competitive advantage (p. 13). Respondents whose organisations had a KM programme in place were asked to specify the benefits that they had realised. Among the benefits described were better decision making (71%), faster responses to key business issues (68%), and better customer handling (64%), (p. 15). 'Reinventing the wheel' was found to be a common problem with the respondents, but interestingly of those organisations having a KM programme only 45% voiced this complaint, compared with two thirds in the case of those who had not (p. 11). Similarly, half of those respondents having a KM programme reported difficulty in capturing tacit knowledge, compared with two thirds of those respondents without a programme (p. 11).

However, KPMG's research also found that respondents had experienced problems in implementing their KM programmes. The aim of a knowledge management programme KPMG proposes, should be to remove the "*frustrations that employees face in gathering and accessing knowledge. Yet only a*

third had of all respondents had a knowledge policies – stipulating which knowledge elements to store, update and cull" (KPMG, 2000, p. 3). Continuing, KPMG states:

"*Organisations that grasp the cultural implications can achieve what we define as the 'High-Performance Employee – an individual who uses KM procedures and technologies to fulfill their own potential and deliver real business benefits to the organization, its customers and its stakeholders*",

(KPMG, 2000, p. 3).

Unfortunately research had revealed organisations to be 'blind' to the employee considerations, reflecting their failure to consider the cultural implications of installing KM (p. 3). Evidence of problems is displayed in the gaps between the benefits expected by organisations, and those that they had actually realised. The consultancy suggests that the problem stems from respondents focusing on the technology issues, instead of simultaneously investing time to understand and grasp the cultural and organisational implications of implementing knowledge management (pp. 3, 15).

Questioning had revealed further detail relating to problems. The introduction of measures which are central to achieving improvements in an organisation's operations and culture, such as rewarding knowledge working, creating a knowledge map – a catalogue or guide showing people what information is available, and measuring intellectual capital, had not been introduced by most of the respondents (pp. 3, 21). Among those organisations having a knowledge programme, a significant number had complained of information overload (65%), a lack of time to share knowledge (62%), and not using technology to share experiences (57%), (p. 11). Implementation issues surrounding the use of technology, were additionally uncovered (p. 19). Among problems reported were a lack of user uptake due to insufficient communication (20%), everyday use of the technologies not integrating into normal working practices (19%), insufficient time given to learn how to use the system (18%), a lack of training (15%), and users not seeing the personal benefits (13%), (pp. 2, 19). In developing proposals for the introduction of KM within DTI, and more widely within government, the author felt

it important to address the cultural and organisational issues. Strategies for implementing effective knowledge management in government are now discussed.

10.5.7.1 Codification and Transfer of Tacit Knowledge of the Process of Designing Support Policy

Section 10.5.4 above discussed the difficulties faced by organisations in accessing the tacit knowledge residing in the heads of individuals. KPMG had provided further evidence of firms experiencing problems in accessing tacit knowledge (KPMG, 2000, p. 11), (see section 10.5.7). Much of DTI's knowledge is rooted in the minds of officials, and not held on file or elsewhere. The author himself is aware of knowledge he holds which is not recorded. Indeed, Brooking (1999, p. 5) suggests that only around 20% of an organisation's available and pertinent knowledge is ever used, and this gives rise to potential inefficiency. Many people recognise the importance of tacit knowledge to any organisation. KPMG refer to the long-term value associated with 'intellectual capital growth' (KPMG, 2000, p. 2). Brooking agrees. For her, making knowledge explicit is strategic to an organisation as it generates infrastructure assets (Brooking, 1999, p. 51). Access to tacit knowledge is thus a critical issue, not only for commerce but for government as well (Drucker, 1993, pp. 174-176). For the author, introducing an effective means to achieve better use of the knowledge held tacitly within DTI, was as an important issue to be resolved.

Facilitating the process of capturing and disseminating tacit knowledge may be regarded as falling to the responsibility of knowledge management (KM). For example CEST suggests one of the prime objectives of knowledge management is "*to turn elusive, invisible, uncontrollable tacit knowledge into visible, measurable manageable explicit knowledge*" (CEST, 1999, p. 9). The management of knowledge is fundamental to raising the efficiencies of organisational processes, and was hence considered an important area for study, in seeking ways to improve the design process. For Brooking, how an organisation accesses and uses data, information and knowledge is key. She argues "*The extent to which the organization can be said to be efficient is the extent to which it applies available data,*

information and knowledge to the problem at hand" (Brooking, 1999, p. 5). Inefficient organisations she points out, re-examine areas and reinvent processes time and again. The solution is to ensure that access to data, information, and knowledge is available to the right people, where and when they need it. For Brooking the process which aims to satisfy this requirement is knowledge management (p. 5).

Hansen, Nohria, and Tierney (1999, pp. 106-108) helpfully differentiate between two types of approaches to knowledge management. They refer to these as the 'codification' and 'personalisation' strategies. The latter is discussed section 10.5.8 below. For the former, Brooking suggests it is preferable to codify tacit knowledge by getting people to analyse and write down what they know (pp. 49, 51). Nonaka and Takeuchi (1995, p. 69) agree, referring to writing things down as an act of transforming tacit into explicit knowledge. It is helpful they suggest if tacit knowledge is conveyed in the form of words, expressed either verbally or in documents. Semi-structured interviews, Brooking (1999, p. 68) suggests, are also a practical means to probe individuals to elicit their internal knowledge.

The literature provides examples of firms adopting a codification strategy. CEST records how a Spanish software house had faced the problem of knowledge that was essential to them serving a particular client's requirements, only resided with one individual analyst. The organisation was concerned over the risk to which it was exposed, arising from the possibility of the analyst leaving, retiring, or having an accident. The software company worked with the Rutherford Appleton Laboratory and the employee, to record the assumptions he made when making decisions. These were recorded as a set of decision rules which could then be employed widely by others (CEST, 1999, p. 9). CEST (1999, p. 9) provides another example of codification. Anglian Water were concerned about loosing invaluable experience as older people retired. To prevent this loss they held a number of 'master classes' in which these people shared their experiences with younger employees. The sessions were videoed, and the messages transcribed and summarised by the knowledge management team. Thus knowledge had been rendered explicit and remained accessible to the company for use after the individuals had left. The master classes are discussed further in section 10.5.8. below.

Turning to the research conducted in this thesis, chapters 5 to 8 mapped the current process for the design of support policy. The author observes that in the mapping task, he undertook the codification of tacit knowledge. He analysed his own knowledge of how the process is undertaken in practice, and wrote his findings down. By carrying out semi-structured interviews of colleagues and others, he was able to externalise their personal know how.

10.5.7.2 Dissemination of Knowledge of Programme Design and Operation

The design process mapped, the question the author asked himself was how best to apply this explicit knowledge in a way which adds value to the design process? Sections 10.4.1 to 10.4.3 compared the content of current guidance with the knowledge of the process gained by looking at 'what happens on the ground'. A number of improvements to improve on current arrangements were recommended, which centred around the development of a new 'Design Handbook'.

From his experience of programme development, the author is able to confirm that the *Innovation Budget Guidelines* have traditionally been circulated in paper format. Initially it is proposed that the new 'Design Handbook' also be similarly circulated. This approach seems sensible. Brooking (1999, p. 49) refers to explicit knowledge in the form of explanations of business processes being written down in manuals, of which the guidelines are but one example. Hansen, and Nohria, Tierney (1999, p. 107-108), in looking at procedures in several industries, refer to companies using traditional means for sharing knowledge. They point to organisations such as Ernst & Young as employing '*a people to document*' codification strategy. Nonaka and Takeuchi (1995, pp. 69-70) share this view, highlighting the use of documents and manuals to facilitate the dissemination of knowledge. Such artefacts they propose enable people to 'internalise' the codified knowledge, by helping them experience indirectly the experience of others. In this way Nonaka and Takeuchi argue, the explicit knowledge is absorbed by the reader and becomes part of his or her tacit knowledge base, that is, it is internalised.

Furthermore the use of guidance notes to convey knowledge by advising people on what they should (or should not) do in conducting their duties, is also a well proven approach. The *Innovation Budget Guidelines* have been in use for over twelve years, and the author suggests they would have fallen into disuse long before now if they were inappropriate to the task. In talking to colleagues, they have informed the author that they find the 'Innovation Guidance' helpful to them in designing support policy. Those that use the Treasury 'Green Book' H. M. Treasury (1997) and the DTI *Finance Handbook* DTI (1996b), have found them equally helpful.

There are other examples of the application guidelines. For example, DTI's Business Link Directorate issues guidance to Business Links, called the *Business Link Service Guide* (DTI, 1997d). The guide advises Business Link Chief Executives on matters such as the content of the information services which they must provide, the listing of consultants, and how they should relate to other government schemes. According to the official responsible for the development and maintenance of the guidelines, the guide has been well received by the Business Links. Chapter 7, section 7.5 pointed to the use of guidelines to aid scheme contractors in managing previous DTI programmes.

Looking across government shows the principle of issuing guidance to be common practice, which the author argues lends weight to the credibility of his proposals. For instance, the Treasury 'Green Book' lists in excess of forty sets of guidance issued across government, related to evaluation and appraisal. A colleague in the Department of Health believed there were some 1,000 separate pieces of guidance issued to organisations such as Health Trusts. Back within DTI, guidelines have been issued to officials on topics such as staff appraisal, health and safety, and ensuring equal treatment of people of ethnic origins.

However to enhance the value of improved guidance, one further addition is required. Marchand (1998, p. 255) refers to several authors highlighting the importance of 'understanding' to knowledge transfer. It is more likely that officials will adopt good practice, if they understand the reasons for so

doing. The author therefore proposes that the expanded guidance include explanations of why certain approaches should be adopted, by detailing the reasons underlying why elements of the design and administration process are conducted in particular ways. Chapters 5 to 8 inclusive looked at the reasoning behind the approaches which have been adopted, and their findings can be incorporated into the 'Design Handbook'.

The author also considered that it would be helpful for officials to be given a set of 'good practice' examples, illustrating mechanisms which have been successfully employed in the past in designing programmes. This would help reinforce the rationale for doing things in certain ways. As described earlier, appendix K of this thesis analyses some of the practices in scheme delivery and administration which have been adopted in previous schemes, and in particular the approaches used in the case study examples set out in appendices D to H. It is proposed that the good (and bad) practice lessons which are identified be detailed in an annex to the new guidelines.

10.5.8 Personalisation Strategy for Transferring Tacit Knowledge

Hansen, Nohria, and Tierney (1999, p. 108-109) propose that an alternative approach to adopting a codification strategy is sometimes required. Much tacit knowledge they suggest cannot be codified, a point agreed with by Brooking (1999, p. 9). Knowledge, Hansen, and Nohria, and Tierney argue, is instead best transferred in brainstorming sessions and in direct 'person to person' dialogue. Nonaka and Takeuchi (1995, pp. 62-64) concur, referring to the use of dialogue as a means to transfer knowledge. Such interactions they propose take place within teams, or in brainstorming meetings involving all interested parties within the organisation. Hansen, Nohria, and Tierney (1999, pp. 108-109) refer to the dialogue based approach as the 'personalisation strategy'. United States of America (USA) consultancy firms such as Bain, the Boston Consultancy Group, and McKinsey, are quoted as examples of companies using a personalisation strategy. Firms like Bain invest heavily in building people networks in support of making their personalisation strategies work effectively. McKinsey for

instance has found it helpful to transfer staff between different offices (Hansen, Nohria, and Tierney, 1999, pp. 108-109).

An industrial example of a company using a personalisation approach is Hewlett-Packard, (Hansen, Nohria, and Tierney, 1999, p. 112). Hewlett-Packard employ their personalisation strategy to facilitate the transfer of technical knowledge, in support of product innovation. Transfer of technical knowledge is affected via 'person to person' exchanges, which result from engineers routinely visiting other divisions of the company, to share ideas about potential new products.

CEST (1999, pp. 7-9) provides examples of UK firms adopting personalisation strategies. They point to ICL in the UK, who when specifying the requirements of one of their buildings, 'designed in' corridors which were sufficiently wide to encourage staff to hold impromptu meetings in which knowledge could be shared.

Brooking (1999, pp. 9) introduces the theme of loosing access to knowledge. For her knowledge is a transient asset, because when employees leave or retire from an organisation they take their know how with them. Cliffe (1998, p. 18-19) continues, suggesting that securing and holding on to knowledge is more important than ever before. Cliffe highlights that the change from an industrial to a knowledge economy means that far more of organisations' value resides in their employees' knowledge rather than in tangible assets. Thus, she observes, when talented people leave firms, they take a meaningful part of an organisation's knowledge base with them. Cliffe (1998, p. 18) emphasises the intensity of present day competition, and its nature of rapid change. For her organisations must "*think strategically at all times and at all levels*" (p. 18).

As introduced in sub-section 10.5.7.1 above, CEST (1999, p. 9) provides the example of Anglian Water, who wished to overcome the problem of losing knowledge held by individuals when people retire. Many employees have worked in the water treatment industry for more than thirty years, during

which time they have built up a wealth of knowledge on and surrounding the processes involved. Most of this valuable knowledge is held tacitly, which is lost as people retire. To help overcome the problem, Anglian Water have introduced a series of 'master classes', in which retiring experts share their know how with others. Structured dialogue is seen as the principal mechanism enabling knowledge transfer. Government departments similarly face problems connected with the loss of expertise and, the author observes, have not implemented strategies to address the problem. Chapter 3 section 3.2.3 referred to a loss of expertise within DTI due to structural changes. People had moved out from the department into areas where they could not easily be approached, some had been lost to 'the system' altogether through severance and early retirement. Change is likely to continue. As discussed earlier, the government's white paper *Modernising government* (Cabinet Office, 1999) heralds yet further modification, and the natural retirement of personnel will inevitably continue. How best then to capture and retain the tacit knowledge of individuals is an issue.

One step to capturing and retaining knowledge has already been undertaken (see sub-section 10.5.7.1 above). Using a codification strategy, the author has recorded explicitly the scope of the policy design process, and the procedures adopted by officials. The use of personalisation strategies provide other possible options to improve the design process. The Anglian Water case study described above provides one such possibility. Like that organisation, DTI should hold its version of the 'master workshops', requiring staff that are leaving their areas of work to explain to colleagues what they have undertaken and what they have learnt.

Hansen, Nohria, and Tierney (1999, p. 112) usefully showed how Hewlett-Packard have exploited person to person interactions for transferring knowledge. Like that company, DTI operates over many sites, and the author observes that officials, unwittingly, do not always communicate in the design process as they should. Adding to the problem is that staff are kept very busy, and do not always have time to widely consult. For example, on 2 August 1999, the Head of Business Link Directorate (BLD), in addressing his PR10s at the first Small Business Service (SBS) development (brainstorming)

workshop, gave an example of staff in different directorates not talking to each other. Approximately one year earlier, DTI's Communications and Information Industries (CII) Directorate, bid for funds from BLD's budget to develop IT awareness package for Business Links. Unfortunately they failed to inform BLD, the directorate responsible!

Like Hewlett-Packard, the author recommends that DTI introduce a management policy which requires officials concerned with policy design in the various directorates to regularly meet one to one with colleagues in related policy areas across the department. The author further recommends that this policy be extended to cover officials in other government departments as well, by way of increasing the 'cross fertilisation' of ideas. At the time of writing this thesis, no such policy was in place.

Nonaka and Tackeuchi (1995, p. 63), and Hansen, Nohria, and Tierney (1999, p. 108) have argued the value of brainstorming of ideas in teams to create knowledge. Staff should be encouraged as a matter of written policy, that when developing new schemes in response to changes in the market or revised ministerial objectives, they should seek to test and generate new ideas by calling brainstorming meetings. Focusing at the team rather than the individual level, these meetings would involve interested parties not only within their own directorates, but also those elsewhere in DTI, and, indeed, those across 'Whitehall'. Nonaka and Takeuchi (1995, pp. 63-64) highlight the value of 'observing others' in transferring tacit knowledge from one individual into the personal knowledge base of another. Thus the author recommends that management policy should advise officials 'shadow' colleagues involved in the design process. Again, the author is not aware of written directives having been issued to officials instructing them to conduct brainstorming sessions and to shadow colleagues.

10.5.9 A Knowledge Base

As discussed earlier, tacit knowledge is a personal resource (Nonaka and Takeuchi, 1995, p. 59; Leonard-Barton, 1995, p. xi; Marchand, 1998, p. 255). Thus, for Brooking (1999), "*Knowledge Management is about people*" (p. 139). Brooking continues, "*It's about people who are the possessors*

of, and indicators to the location of knowledge in a company" (p. 139). Leonard-Barton (1995, pp. 4-5) develops the 'people' theme. For her, the starting point for managing knowledge is about gaining an understanding of the core capabilities. The development of core capabilities, she argues, is inextricably linked to knowledge creation, and therefore contributes directly to competitiveness. To create and maintain core capabilities, organisations must manage and encourage the activities which create knowledge and determine what is core capability.

Drucker states:

"*Organizations are characterised by being 'special purpose' institutions. They are effective because they concentrate on one task*",

(Drucker, 1993, p.47).

Government departments such as DTI are organisations fitting Drucker's characterisation. Their principal job, and the specialism of their personnel, is that of policy making, with the objective of improving life for the community as a whole (Cabinet Office, 1999, pp. 15-17). The focus on knowledge management should thus be on building the competencies of officials in the policy making process. However in implementing knowledge management, there are important issues to be resolved. The knowledge management function is not performed well in organisations because people are not omnipotent (Butler Group, 1995, pp. 13-14; Brooking, 1999), and, proposes Brooking, the goal of knowledge management (KM) should be to make employees '*all knowing*' (p. 139). Good KM suggests Brooking (1999, p. 5) allows access by people to the information that they require, at the right time. Such access to data is important in preventing organisations from repeating mistakes and 'reinventing wheels'. This is a problem experienced by many organisations (KPMG, 2000, p. 11), (see section 10.5.7 above).

However, as Brooking points out, the quantity of knowledge which exists in organisations like DTI is large, and of a such a level that renders its documentation impractical. It is better, she argues, to create instead a knowledge base which shows where particular expertise resides. KPMG continue the theme (section 10.5.7). They highlight the importance of creating knowledge maps, which show people what information is available (KPMG, 2000, p. 3).

DTI has already taken steps towards creating a knowledge base. Inspection of the *Innovation Budget Guidelines* (DTI, 1999a, annex 3, pp. 85-88) shows them to list each directorate and section within DTI which has an interest in the administration of the Innovation Budget (DTI, 1999a, annex 3, pp. 85-88). They have already been placed on the department's Mandrin Intranet (see also section 10.6 below), and are accessible from peoples' workstations. For each entry a brief description of the directorate's or section's responsibilities is given, together with details of whom to contact. This information is effectively backed by the issuance to every official of the department's Functional Directory (DTI, 1999d), which again not only gives brief summaries of the function of each directorate and section, but also the responsibilities of each member of staff. The directory was in the process of being added to the intranet at the time of writing this thesis.

However Brooking (1999, pp. 139-141) highlights the need to be able to locate all relevant documents to a task. A comprehensive list of guidance and other documents associated with the design process is not available. It is suggested that such a list be created and be added as part of building a knowledge base. This would assist officials in ensuring that they have accessed all the relevant sources of knowledge in building rationale for new policy and interventions. An important entry would be the new 'Design Handbook' as a means of aiding access to a fuller set of knowledge on the design process. The author further proposes that as part of building the knowledge base supporting programme design, electronic access to each of these documents, including DTI's *Finance Handbook* (DTI, 1996b), also be provided from officials' workstations. To add further value, it is additionally suggested that the

knowledge base use well proven database techniques, such as 'context searching' to enable officials to quickly identify sources of help.

However, a well constructed knowledge base is helpful in other ways. Brooking (1999, pp. 9, 139-141) refers to the importance of knowing where expertise resides in an organisation. It is, she suggests, impractical to ask people to write down everything they know. People do not have the time to record their knowledge, simultaneous with servicing their day to day workloads (p. 9). Therefore people should be regarded as the knowledge network 'gatekeepers', who can be contacted by others in regard of expertise which they hold. To provide ease of access to the gatekeepers, details of their areas of specialism should be held on the knowledge base. By tracking the movement of staff and recording their current location within the organisation, access to their expertise can be maintained. The author proposes that details of personal experience and the tracking of staff changes be held on DTI's knowledge base, a facility that is currently not present.

There are other considerations which support the rationale for including details of personal expertise on the planned knowledge base. Brooking (1999, pp. 141-142) highlights the difficulty of determining what is lost to an organisation when an employee leaves. By recording details of peoples' personal experience, 'management' can quickly assess the extent of the loss by interrogating their entry on the knowledge base. The knowledge base can then be employed to quickly identify other members of the organisation who can help 'plug the gap'. CEST (1999, pp. 7-8, 12) also supports the argument for a knowledge base. They suggest the most effective way of exchanging knowledge is to bring together people sharing a common interest. This presupposes that people who need to talk to each other are each aware of others existence and that they are the right people to communicate with. To help make the task of locating people easier, CEST report many organisations having invested in '*know who*' databases (p. 12).

A knowledge database can also be extended to act as a resource for storing and accessing explicit knowledge. CEST (1999, pp. 8-9) provide as a case study, Linklaters, a firm of City of London solicitors. Each practice comprising the firm deals in a different area of legal specialism, and records on a 'know how' database the significant transactions which have been undertaken. The database consists of the original material and structured indices, which through sophisticated thesauri allow the database to be searched for data which might be relevant to a new case. CEST (1999) argue that, in the Linklaters example, most of the tacit knowledge associated with the execution of each transaction, for example, the reasons why a particular letter was important to the resolution of a case, is recorded in its explicit form. In this way they suggest, the firm maintains a permanent record of its knowledge, which helps protect them from the loss of their personnel.

The author suggests it would advisable for DTI to adapt the Linklaters system for use within the department. A study should be undertaken to identify the areas where the introduction of such a system would yield significant benefits. For the author, the recording of documents generated as part of the programme approval process would be a good starting point. The majority of documents are now created using networked workstations, allowing them to be processed and transferred directly into the knowledge base. The knowledge base could thus hold copies of documents such as minutes between officials discussing market failure, ROAME statements, and the minutes of IPC meetings.

A knowledge base should also be designed to help ease the fundamental problem of knowledge often not being captured explicitly, when tacit knowledge is transferred directly between people. For example, in one to one dialogue, codification of tacit knowledge into an explicit form may not occur. Or, as argued by Hansen, Nohria, and Tierney (1999, p. 108), it may be that codification is not possible. In these instances although tacit knowledge is transferred, the organisation as a whole is still unable to gain access to it. However CEST (1999, p. 7) refer to the 'transfer of tacit knowledge to tacit knowledge' process as often leaving explicit traces. These 'traces', they propose, can be used as indicators of the nature and likely location of the tacit knowledge which they derived from. They cite

as an example Buckman Laboratories. The company has an extensive system of electronic newsgroups, which allow 'front line' staff dealing with customers to pose questions which are picked up by staff across the company. It is not unusual for an enquirer to receive several responses to each problem posed, and these are summarised and stored on the system for future use.

The advantages of the system are that it enables and promotes 'live' inter-disciplinary dialogue, with a person able to access the knowledge of another without classification, storage, archiving or retrieving. It has been found that the unstructured nature of the dialogue has led to unknown knowledge being uncovered. Thus the system has promoted the revealing and sharing of tacit knowledge. It is acknowledged that much of the tacit knowledge is exchanged during 'live' dialogue, but the entries on the newsgroups are explicit, and can be summarised and archived for future use. Given the Buckman Laboratories experience, it is suggested that as part of building the knowledge base, DTI investigate the use of its Mandrin intranet to allow officials to post questions on matters relating to policy development. Like Buckman, questions and responses could be regularly collated and summarised, with the summaries placed in an electronic file which officials could then search to find material of interest.

Lastly chapter 3, section 3.6.1 uncovered problems with the current system of holding documents in 'hard copy' in physical files. These concerned the destruction of certain files with time, and the difficulties of accessing files held in different locations. Capitalising on the fact that most documents are created electronically, the introduction of a knowledge base along the lines described above is seen as being helpful in overcoming the problems identified, by providing 'on-line' access to documents and explicit knowledge transferred from people and the documents themselves.

10.5.10 Updating the Knowledge Base

Leonard-Barton (1995, pp. xi-xiii, p. 1) refers to what she terms the '*wellsprings of knowledge*' in organisations. The wellsprings are the knowledge reservoirs in an institution. Knowledge, she

observes, accumulates continuously with time, and is shaped and directed by the daily managerial decisions. Thus knowledge reservoirs are constantly replenished by 'streams' of new ideas which source corporate renewal. Marchand (1998, p. 253) agrees. He refers to the relationship between knowledge and information which continuously changes in organisations. For him it is the resultant, continuous conversion process between information and knowledge which provides on-going opportunities for improvement.

The knowledge base must therefore be continually up-dated. While the various arrangements proposed in this chapter will in many cases be self up-dating, it is proposed that a team of officials be identified and given the remit of regularly interviewing officials, by way of making sure that a formal system is in place to capture the new knowledge as it is created. The knowledge team would be required to write down their findings to express new tacit knowledge explicitly, which could then be placed on to the knowledge base. They would also be responsible for co-ordinating the other measures described, such as capturing and analysing the content of documents as they are created, to ensure that the knowledge as it is created is added to the knowledge base.

10.5.11 Importing External Knowledge

In organisations building their capabilities, Leonard-Barton (1995, pp. 12-13, 28) suggests they will normally have to import knowledge from external sources. Absorbing external information, she argues, is critical to success.

10.5.11.1 Benchmarking

Peppard and Rowland (1995, pp. 167-169) commend the use of benchmarking to highlight areas where processes can be improved. For them benchmarking is useful in broadening peoples' perspectives. Harrington (1991) suggests the importance of people having something to toil for. For him "*every person, process, and organization needs goals to strive for. Without them we drift on a sea of*

confusion. We all want to improve. No one likes to be average" (Harrington, 1991, p. 219). Harrington continues by referring to the past tendency of organisations to set goals based on their previous performance, without reference to the performance of others. Thus, he argues, targets were set which could be easily met, giving a false sense of achievement and depressing the realisation of the true potential. Benchmarking, Harrington suggests "*is the antidote to this self imposed mediocrity*" (p. 219).

Cox and Thompson (1998, pp. 1-6) refer to the use of benchmarking to improve aspects of business performance. They define benchmarking as "*the process through which 'best practices' are discovered and subsequently adopted in an organization, with a resultant performance improvement*" (Cox and Thompson, 1998, p. 3). For them, benchmarking "*is little more than copying what someone else appears to be doing better*" (p. 3). Benchmarking, they suggest, has become one of the most popular business management tools of the 1990s' (p. 1), and has developed as an instrument of common application across all sectors of industry and commerce. Thus the author concluded that the use of benchmarking should be investigated, as a further avenue for obtaining new knowledge which may be exploited in improving the policy making process.

Cox and Thompson (1998, pp. 4-6) suggest two levels of benchmarking may be deployed. Internal benchmarking, which does not transcend the boundaries of the organisation, relies on objective assessment and comparison of individual units and processes within that organisation. The concept, they argue, is more appropriate to situations where units have a high degree of autonomy. In contrast, external benchmarking involves assessment of the activities and systems of outside, non related organisations, with the intent of identifying the better practice processes which may be adapted and implanted internally.

Cox and Thompson (1998, p. 6) continue by describing three types of benchmarking, these being Competitive, Functional, and Strategic. Competitive benchmarking involves benchmarking the special

factors which contribute to a competitor's success, and is often difficult to achieve as competitors are unlikely to reveal the secrets of their success. Strategic benchmarking involves looking at an organisation's core competencies which contribute to success. However Cox and Thompson argue that the concept is largely untested and doubts exist over its validity. Functional benchmarking relies on comparing systems and processes which have factors in common, rather than the structures of organisations. Hence the concept is often referred to as generic benchmarking, because its application is not restricted to any one type of organisation, and hence its wide use to-date (Cox and Thompson, 1998, p. 6).

From the above arguments, it was considered that external benchmarking using the generic, functional approach, would be the most likely approach to bring significant benefits for DTI. It was thought that the discipline enforced on the design process by the constraining factors described in chapter 5, section, 5.2.4 are such that radical differences in practices are unlikely to be found across DTI. Therefore internal benchmarking is not likely to be of value. It was also considered that inspection of procedures in Other Government Departments (OGDs) across Whitehall should not be given priority, as many of the 'constraints' will apply equally to officials in these organisations.

The author therefore considered that the greatest benefits from benchmarking would be realised from adopting an external approach. In deciding on the type of benchmarking to adopt, the competitive and strategic benchmarking approaches were rejected, on the grounds of the secrecy issues of the former and the unproven nature of the latter. Functional benchmarking was judged to be the more appropriate approach, as the concept is well proven and affords comparisons independent of the business sector. The opportunity was seen to benchmark current DTI processes not only with public organisations abroad, but also private sector companies both in the UK as well as internationally.

Whilst the development of a detailed benchmarking strategy is viewed as lying outside the scope of this thesis, an outline strategy can be proposed. It is suggested that the model of the policy design

process as mapped in this thesis be deployed as the initial starting point for benchmarking. It is suggested that for each of the stages defined in the process of designing support programmes, the procedures adopted in these stages by other organisations be examined, and the process elements identified. Each of the process elements would then be compared with those adopted within DTI, looking for cases of commonality and examples of where different processes are deployed. In each instance the relationships between the process and performance would be investigated, with the objective of determining the good, and bad practice approaches. The results of such analysis would then be made widely available to officials within the department and government more widely. An important part of the benchmarking process would be to test the validity of the model for general application, making any necessary changes to its design.

Benchmarking is not the panacea. Cox and Thompson (1998, pp. 11-12) warn of the dangers of placing excessive emphasis on benchmarking, which runs the risks of organisations' products and services becoming more alike. Harrington (1991) refers to firms reaching a plateau, where they have improved to the extent where their processes have become the world's benchmark.

The author recognises the danger of DTI simply producing clones of others' programmes. However the author considers that DTI has been historically innovative its design of new schemes, a fact which is indicated by others adopting the department's designs. In a conversation with Mr. John Launchbury, the official responsible for the operation of the Inside UK Enterprise (IUKE) scheme, (see appendix G, section G.8.2.4, p. 122), he informed the author that the initiative had been adopted by the Canadian, German, and Austrian governments. The concept has also been adopted in the Netherlands, and in the Basque region of Spain.

Mr. Philip Sowden of Technopolis was able to site further examples, based on his experience of working abroad. In Egypt, as part of the government's Industrial Modernisation Programme, sixteen Business Resource Centres are to be established. Funded by the Egyptian Government and the

European Union, the centres are modelled on DTI's Business Links. The Cypriot Government as part of their industrial modernisation programme are funding consultancy projects aimed at helping firms to develop their capabilities. Sowden advised that the Cyprus Government was anxious to ensure quality in the services delivered by the consultants, and modelled the programme on the UK's consultancy Initiatives (appendix F, pp. 95-105). It is hoped that the innovative culture within the department will continue to flourish. Implementation of the proposals for knowledge management in policy design should help foster the innovation process, allowing officials to build on international experience to build on their record of introducing inventive schemes.

10.5.12 Improving the Process of Evaluation and Learning

Chapter 8 demonstrated the strategic importance of 'Evaluation and Feedback' in the programme design process. However in analysing the process of designing support policy, the author felt that the best use of Evaluation (including mid-term reviews of programmes) is not being made. In talking to colleagues he found a tendency for them to read only those evaluation reports which are directly related to programmes for which they have, or have had, responsibility. Other reports are often ignored, and hence he concluded that the process of 'feeding back' was not fully effective.

As discussed in chapter 1, section 1.2, a large number of evaluation reports have been drafted, and is too great for officials to search through to see what lessons they may learn from past operating experience. The author was concerned that important knowledge relating to policy design is effectively being hidden. He considered that the reports could be viewed loosely as 'explicit traces'. Whilst a proportion of the tacit knowledge used and gained in designing policy and in the running of programmes would remain tacit, in undertaking the evaluation exercise much would be codified into the explicit form. For example chapter 8, section 8.4 referred to evaluators carrying out face to face interviews of those involved in programmes, with their findings being written down in the reports. Thus an important part of the tacit knowledge used in introducing a programme is held explicitly in these reports.

To improve access to the knowledge contained in evaluation reports, it was thought helpful if previous reports were analysed to determine the best practice lessons in programme design. These lessons could then be recorded and held on the proposed knowledge base. There are problems in drawing comparisons across evaluations, as the circumstances surrounding the introduction of interventions can differ. Furthermore the distributed nature of 'Evaluation' as currently implemented can cause problems over consistency in the interpretation of results, as the evaluators work in comparative isolation from one another. Nevertheless it is considered that analysis across evaluations to determine good practice is possible, providing the analysis addresses the fundamental economic issues (see appendix J, section J.2, p. 155). As an additional step, it is also proposed that evaluation staff in the separate units be brought together into a single evaluation unit. By grouping the evaluators together the sharing of tacit knowledge can be facilitated through adoption of a personalisation approach, using mechanisms such as face to face dialogue and brainstorming sessions (see appendix J, section J.2, pp. 156-157).

The above proposals are considered as addressing the need to improve the manner in which evaluatory findings are presented to the design process, thereby answering the supplementary question (v) – b, (chapter 3, sections 3.5 and 3.8.3). Appendix J section J.2, pp. 155-157, describes in greater detail, the background leading to these recommendations. It discusses the problems existing with current arrangements for 'Evaluation' within DTI, and the issues which need to be considered in identifying ways to make improvements.

10.5.13 Taking Account of Experience

Section 10.5.7 suggested 'information overload' to be a problem experienced by many organisations. Blosch (2000, p.12) takes up the theme. He refers to much work having been done by organisations in developing approaches to KM, that are principally based on providing better communications channels to individuals and stored information. By way of an example he refers to organisations having built

electronic libraries that store a company's documentation, which can be accessed via sophisticated search facilities over the Internet. While seemingly attractive, Blosch cites problems with the approach. Reinforcing KPMG's observations (KPMG, 2000, p. 11), he points to many personnel suffering information overload. Too much data, Blosch proposes, causes increases in communication times, which in turn accentuates the overload problem. Therefore, while access to information is important, access to the right information is even more so.

KPMG (2000, p. 3) points to the frustrations experienced by employees in accessing knowledge, and indicates the importance of minimising the data held by specifying the knowledge elements to be stored, updated, and culled. For the former, Blosch (2000, pp. 13-14) provides further advice. Using DHL as a case study example, he refers to the need for organisations to have a framework for KM which provides coherence in the data provided. Knowledge elements contained in the framework should, Blosch suggests, comprise descriptions of the processes, the events that drive these processes, the data and systems that underpin the processes, the process goals, the underlying reasons for undertaking a process, descriptions of the process networks, and details of the people involved.

In support of developing the knowledge elements the role of using process maps is highlighted. Blosch lists several advantages of process mapping. They include the provision of diagrammatic representation of what actually happens, the capturing of knowledge from a broad range of individuals across an organisation in a consistent and coherent way, and by supporting innovation by enabling people to discover what is undertaken as a basis for seeking improvement. In developing a process map, Blosch cautions against providing a diagram which describes the whole organisation in detail. It is better, he suggests, to produce maps representing parts of the business process Blosch 2,000, p. 14). Interestingly Blosch mentions that it is possible to employ IDEF modelling to generate the process maps (p. 14).

The author contends that his proposals for a knowledge base supporting programme design, contain many of the desired features of the knowledge framework described by Blosch. To begin with he has not attempted to describe the complete business process of DTI, but one part of that process, the design and administration of support programmes. Secondly, much of what is required would be provided by incorporating the proposed *Handbook for Programme Design and Operation*, into the knowledge base (section 10.5.9). Proposals for drafting the new handbook were discussed in section 10.4.3. Sub-section 10.4.3.4 suggested that a process map setting out and detailing the stages comprising the design process, be contained in the proposed handbook. The map would be based on the flow chart described in chapter 8, section 8.8 (Figure 8.3), which in turn would be derived from the application of IDEF0 to analyse and model the design and administration process.

Factors which drive the design process, that is the policy directives contained in white papers, the specific priorities of individual ministers, and changing market conditions, would be described in the new guidance, (see sub-section 10.4.3.5). By analysing the 'inputs' to the various parts of the design and administration process, the information sets which underpin each component would be recorded (see sub-section 10.4.3.4). Sub-section 10.5.7.2 recommended including in the revised guidelines the underlying reasons for certain procedures being adopted.

Research also enables the remaining requirements to be substantially met. In mapping the overall design process a number of the people directly involved have been identified. (The identity of others can be determined through inspection of chapters 5 to 8 inclusive, which describe the functional areas. DTI's Functional Directory can then be employed to determine which officials are involved in each of these areas). As argued in sub-section 10.5.7.1 above, their tacit knowledge, including that of the author, has been captured in developing the IDEF0 model. The content of the proposed handbook being based on the contents of the model, would hence provide officials with an explicit record containing a significant part of DTI's tacit knowledge relating to scheme design. It is further suggested that by placing on the knowledge base details of the people engaged in designing and administering

programmes, including descriptions of their responsibilities, a comprehensive source of reference would be provided (see section 10.5.9). This, it is suggested, would enable people to quickly locate colleagues engaged in a particular part of the design process.

Finally, it is proposed that details of the 'programme network' (the subject was introduced in chapter 3, section 3.3.2, and chapter 5, section 5.6) be included on the knowledge base, providing information on the organisations involved and their respective functions. Analysis of the findings contained in chapters 5 to 8 enables the structure of the network to be determined, and the principal relationships are summarised below:

Relationships within Government

Officials network with colleagues engaged in programme design to learn from others' experience (chapter 5, section 5.3.5), in the setting of budgets (chapter 5, section 5.2.6), in programme approval to debate the rationale of cases for support (chapter 6, sections 6.4.2 and 6.5.1), and in the evaluation of programmes (chapter 8, section 8.5).

Officials interact with ministers in the seeding of ideas and discussing priorities (chapter 5, sections 5.2.5 and 5.2.6, chapter 6, sub-section 6.2.3.8), in setting overall budgets for programme work (chapter 5, section 5.2.6), and in programme approval (chapter 6, sections 6.4.3, 6.5.2, 6.5.3 and 6.5.4).

Officials maintain dialogues with colleagues in HM Treasury, UKREP, and the European Commission in the approval of schemes (chapter 6, sections 6.4.4 and 6.4.5).

The views of ministers across government on the priorities to be addressed, including those of the Prime Minister, have been captured by officials via the Cabinet Office Advisory Committees (chapter 6, sub-section 6.3.3.1).

Officials in headquarters directorates work with colleagues in the regional Government Offices (GOs), in programme delivery (chapter 7, sections 7.2 and 7.3.1).

Relationships with External Bodies

Ministers and their officials network with members of the 'press' in the launching of programmes (chapter 7, section 7.7).

RTOs act as providers of evidence of market failure to officials (chapter 5, sections 5.3.4 and 5.3.7, chapter 6, sub-sections 6.2.3.4 and 6.3.3.2), as consultants to undertake research into market failures (chapter 6, sub-section 6.3.3.3, chapter 7, section 7.6.2), and as contractors to deliver initiatives (chapter 7, sections 7.2, 7.3.1, 7.3.2, and 7.6.2).

Officials network with HEIs to learn of market failures and obtain advice on programme design (chapter 5, section 5.3.4, chapter 6, sub-sections 6.2.3.4 and 6.3.3.2). Officials also liase with HEIs in their role as contractors undertaking commissioned research of market problems (chapter 6, section 6.3.3.3), in monitoring schemes (chapter 7, section 7.3.1), and in programme delivery (chapter 7, section 7.6.2).

Consultancy organisations provide advice on market problems and in the development of delivery strategies (chapter 5, section 5.3.8, chapter 6, sub-sections 6.2.3.4 and 6.3.3.2), act as contractors to research market problems and to deliver programmes (chapter 6, section 6.3.3.3 and chapter 7, sections 7.3.1 and 7.6.2). Consultants are also employed by officials to undertake programme evaluations (chapter 7, section 7.6.2, chapter 8, section 8.5).

Trade associations help stimulate ideas (chapter 6, section 6.2.3.4) and deliver initiatives (chapter 7, sub-section 7.3.2.1 and section 7.6.2).

Regional development agencies can provide officials with information relating to market problems (chapter 6, section 6.3.3.2).

Training and Enterprise Councils (TECs), enterprise agencies, local authorities, professional institutions, commercial organisations other than consultancy companies, have also been involved in programme delivery (chapter 7, section 7.6.2).

Officials interact with SMEs as providers of information relating to market failures (chapter 5, section 6.2.3.4), and as organisations receiving support. Numerous instances of firms receiving help are contained in this thesis, and for some specific examples the reader is referred to appendices E to H. SMEs also interact with the design process through them informing the process of evaluation (chapter 8, sections 8.3 and 8.6).

As indicated above, it is proposed that a description of the programme network be placed in the new guidelines, or alternatively as a discrete item on the knowledge base, to help officials identify sources of help and how they can be used. It is also suggested that the knowledge team introduced in section 10.5.10 above, also be made responsible for 'culling' the knowledge base, removing data which is no longer required. This is seen as an important function to help prevent information overload, as discussed in section 10.5.7, (KPMG, 2000, p. 3).

10.6 The Mandrin Intranet

Inspection of DTI's Mandrin intranet shows it to provide officials with a range of facilities. These are now summarised. Via Mandrin officials can access electronically documents such as government white papers, DTI's spending plans, the departments Functional Directory, press releases, DTI's aims and objectives, ministers speeches, and records of Parliamentary business. 'Team Forum' provides a facility for officials to place on an electronic notice board summaries of important events or

documents, such as matters relating to a Regional Development Agency's (RDA's) regional economic strategy, programme announcements, office notices, and information relating to the European Structural Funds. Details of DTI's specialist groups such as the 'Knowledge Management Unit' and the 'Future Unit' are also provided. Guidance on how to deal with ministers together with their bibliographies, and descriptions of their responsibilities, are also included. The author proposes that the value of the Mandrin intranet can be significantly enhanced by providing access to the proposed knowledge base supporting programme development, as described in sections 10.5.9, 10.5.10, and 10.5.13 above.

10.7 Addressing the Cultural and Organisational Issues

Section 10.5.7 illustrated how companies were being prevented from fully realising the benefits of installing knowledge management programmes, due them failing to observe the cultural and organisational issues associated with implementation. In rolling out a knowledge management programme within DTI and the other government departments (OGDs), it was considered as fundamental to develop an implementation strategy which would address these issues, if the problems experienced by others are to be avoided.

Buckman (1999, pp. 22-25), chairman and CEO of Buckman Laboratories International Inc, is able to advise on strategies to overcome the cultural issues, based on his experience of running the company. He highlights the need to identify and address the barriers to the sharing of knowledge, that are inherent in an organisation. KPMG (2000, p. 19) drew attention to technology related problems, such as the everyday use of technologies not integrating into normal working practices. But, Buckman suggests, introducing the technology is the 'easy part' of knowledge management (Buckman, 1999, p. 22). In contrast he sites the natural reluctance of human beings to give up the advantage of hoarding private, individual know-how as the major inhibitor to knowledge sharing (see the example relating to sales staff in the following paragraph). People, Buckman proposes, perceive knowledge as power,

providing them with the ability to maintain personal influence (p. 22). Therefore the problem is a human one rather than technological (Brooking, 1999, p. 139).

Continuing, Buckman suggests that competition between divisions drives many people to grow their knowledge and use it to succeed (p. 22). However, experience in Buckman Laboratories has demonstrated a tendency among sales personnel to resist sharing what they know. They feared giving away their knowledge because their salaries were related to sales volumes, which in turn were related to their knowledge of the market. Buckman (2000, pp. 23-24) suggests that engendering trust is essential in creating a culture in which knowledge is openly shared. Trust, he proposes, comes from ensuring that all members of a company, irrespective of their level, has equal access to an organisation's knowledge base. Communication is also fundamental. KPMG (2000, p. 19) refers to a lack of user uptake of knowledge management systems due to insufficient communication. Nobody, Buckman argues, must be inhibited from communicating with someone else, no matter what their relative positions are within the company.

Rewarding as a group those who contribute to an organisation by communicating their knowledge is seen as a strategy to overcome problems (Buckman 1999, pp. 23-24; KPMG, 2000, pp. 3, 21). It is important to ensure that those who contribute most to the system are easily identifiable, and are perceived as having their span of influence and hence power, increased. In this way the collective power of people grows, which is realised as improved success for the organisation (Buckman 1999, pp. 23-24). The author observes that the strategy would address the issue raised by KPMG (2000, pp 2, 19) of users not seeing the personal benefits. By way of motivating staff to exchange their experiences and contribute to the knowledge base, top contributors should also be physically rewarded (Buckman 1999, pp. 23-24). In the Buckman Laboratories case, staff were invited to attend an event held at a resort. By so doing, it is suggested, others were more motivated to participate in knowledge sharing. At the event, participants held formal meetings and shared ideas on how to advance knowledge sharing, thereby adding further value.

It is proposed that the above approaches would be additionally helpful in overcoming the difficulty of people perceiving a lack of time to share knowledge (KPMG, 2000, p. 11). The incentives of recognition and physical rewards would, the author suggests, cause staff to give knowledge sharing a higher priority, and thus to find the time to exchange their experiences with others.

Returning to problems experienced in Buckman in relation to the sales staff not wishing to share their knowledge, it is thought that DTI could face a similar difficulty. The author observes that while officials in the design process are not involved in 'selling' in the normally accepted sense, their salaries are nevertheless linked to their performance. Officials are given annual performance reviews where they are awarded box markings related to their achievements against specified objectives. The size of an individual's subsequent pay award is directly related to the box marking which has been awarded. In the interests of encouraging officials to share their knowledge, it is proposed that the government re-appraises its current policy, and removes the relationship between the pay of individuals and their personal achievements. Instead, it is suggested, it would be better to reward officials collectively, more in line with the Buckman Laboratories approach.

The author further proposes that DTI and the OGDs, similarly introduce incentives for the sharing of knowledge as observed in the Buckman case. For DTI the author proposes that the knowledge team track the levels of knowledge sharing via the knowledge base, and via the Mandrin intranet display a list of the frequent contributors. Learning from Buckman Laboratories's experience it is additionally proposed that the department hold annual 'away days', where primary contributors can exchange ideas and see how best the knowledge created can be applied to help DTI and OGDs meet their objectives. In designing the knowledge base, care should be taken to establish equal rights of access across government.

KPMG in their report (KPMG, 2000, pp. 2, 19) recorded people experiencing problems over insufficient time to learn how to use the system, and a lack of training. DTI has an excellent history of training its people. For example, as the latest Mandrin system was introduced, each member of the department's staff attended a one-day training course on how to use the system, and learn of the facilities available. In support of the training day each official received a comprehensive manual describing the system and giving instructions on how each facility should be used. However with time the author observes that as time passes the information accessible via the intranet changes and grows, and at such a pace that it is not always possible to keep up with progress. Via the intranet staff are regularly updated on additional facilities as they are introduced, but the author nonetheless recommends that DTI holds one half day refresher courses to help officials stay abreast of developments. Holding the refresher sessions every six months is suggested as being adequate.

10.8 Conclusions

The purpose of the work described in this chapter, was to respond to the fifth research question which sought to identify ways in which the process of designing and administering programmes could be improved (see chapter 1, section 1.5). The question has been answered, with a number of improvement strategies proposed and their efficacy argued. Among these, proposals for the development of the *Handbook for Programme Design and Operation*, that provides a comprehensive set of good practice guidance to fully support officials in the design process, has been detailed. This satisfies the third and final research objective (c), (chapter 1, section 1.2).

As part of re-engineering the process of developing support initiatives, chapter 3, sections 3.4.2 and 3.8.3, posed the supplementary question of how knowledge management could be employed to improve the efficiency with which the design and administration of programmes is undertaken. Sections 10.5 to 10.7 record the analysis of how knowledge management can add value to the design process, and a number of steps that can be taken to introduce KM were proposed. Central to these proposals is the introduction of a knowledge base to support scheme development, which

simultaneously will promote continuous improvement by helping DTI, and if implemented more widely other government departments, to move towards becoming learning organisations (see chapter 3, sections 3.4.2 and 3.8.3). As part of the overall KM strategy the approaches which should be adopted to benchmark external organisations have been identified, and thus the supplementary question (v) – d, which is concerned with the importing of good practice has been addressed. A response to the supplementary question (v) – e, which sought to overcome the problems of losing archived data with time, has also been provided (see chapter 3, sections 3.4.2 and 3.8.3).

In developing the ideas for the introduction of knowledge management, the experience of commercial organisations in implementing their KM systems has been taken into account. Based on good case study examples a set of strategies aimed at reducing the effects of commonly experienced problems has been developed. Thus it is argued that the author's proposals for implementing KM to support the design process are pragmatic, and that the implementation of the suggested measures should result in improved efficiency. Thus it is claimed that the second research objective (Objective (b)), of developing proposals for exploiting research findings to achieve better VFM, has also been achieved (chapter 1, section 1.2).

The introduction of DTI's Mandrin intranet has provided a number of facilities which represent good examples of knowledge management (section 10.6), but comparison with practice adopted elsewhere and the measures recommended by the gurus in the subject, suggests that DTI has still a way to go before it becomes a true learning organisation (sections 10.5 and 10.7). Implementation of the measures proposed in this thesis to aid the process of developing and running programmes, would be an important step towards realisation of the learning goal. Furthermore, it is argued that the pragmatic nature of proposals gives rise to the potential to apply the KM principals described in this thesis more widely within the department, and across Whitehall, to support the range of activities undertaken in government. Therefore, importantly, it is suggested that the proposals for knowledge management

have the added potential to help the government realise its over arching aim to improve policy making throughout its administration (section 10.2).

Chapter 3, section 3.5, discussed the incremental nature of the programme design process within government, a phenomenon which Lindblom refers to as 'incrementalism' (Lindblom, 1977, pp. 313-317). Section 10.3 above observed that the best practice strategies adopted for re-engineering processes in companies, are similarly incremental in their approach. The issues to be considered at the time of embarking on projects for change are too complex to be resolved in a single, 'big hit'. It is therefore suggested that Linblom's observations apply more generally, being equally applicable to the development of policy within commercial organisations.

Chapter 3, section 3.3.3, also recommended that it was important to discover the structure of that part of the 'producer network', which supports the process of designing and administering schemes, that is the 'programme network'. Research has revealed this component of the producer network to be far reaching, extending both within and externally of government, involving people at different levels and comprising a broad range of organisational types. The members of the programme network, together with descriptions of their relationships with the design process, have been summarised (section 10.5.13). Apart from usefully informing officials in the design process of who they should establish relationships with, details of the network participants should be of more general interest to researchers engaged in public policy. Chapter 11 now summarises the work undertaken in this research, drawing overall conclusions from the observations made.

CHAPTER 11

CONCLUSIONS

11. CONCLUSIONS

11.1 Research Observations

Chapter 1, section 1.2, set out three research objectives. These were to make a contribution to knowledge by obtaining a detailed description of the process of designing and administering support programmes, to identify strategies for improving the process, and as part of the latter to develop proposals for a set of good practice guidance. Chapter 1, sections 1.3.1 to 1.3.3, 1.4.1, 1.6, and 1.9, set out the six research questions which had to be answered in support of meeting these objectives. Research has provided a comprehensive set of responses to the questions, and through these answers it is claimed that the research objectives have been fully met. As part of meeting its objectives, it is further claimed that the research has provided for the first time, a detailed description of the process of designing and administering publicly funded support programmes for SMEs. In addition, a practical set of proposals for improving the overall process has been developed. Furthermore it is suggested that these proposals have the potential to be widely adopted in the public sector, as the principal features of the design and administration process are identifiable in programme development outside of DTI (chapter 4, section 4.8.1, and chapter 9, section 9.3). Chapter 3, section 3.2.2, revealed the high levels of government spend world wide on support initiatives for industry. It is thus suggested that if widely employed, the proposals have the potential to help administrations generally to realise better value for the money, from the funds that they invest in support initiatives.

Success in achieving the research aims indicates the efficacy of the research strategy that was adopted for investigations. It is considered that the success of the investigatory method is partly attributable to the adoption of ethnography, with the author acting in the role of participant observer (chapter 4, section 4.5). As a participant observer the author was able to employ his own knowledge of the design system, both as the foundation on which to build an understanding of the design process, and at the beginning of the research project to understand where research effort should be directed. In the latter case, the author's direct involvement in programme design also allowed him to know whom he should approach for information. He knew what peoples'

responsibilities were, and therefore what knowledge they would be likely to have. From observing colleagues in the work place the author was aware of their personal characteristics, and therefore understood how well they analysed their own situations and therefore represented good candidates for questioning, and how individuals should be approached to obtain information.

Importantly, as a civil servant employed by DTI for a number of years, the author was a fully accepted, and trusted, member of the community in which he worked. This acceptance facilitated access to the information that people held, as he had the 'tacit permission' to approach them. The author never once experienced a blocking of information, or a refusal to requests for papers etcetera. Similarly the author experienced no difficulty in securing interviews with colleagues. As a member of the community engaged in the design process, the author was also able to closely observe the actions of others, and benefit from their experiences through tacit to tacit knowledge transfer. In consulting the literature, the author observes that his decision to adopt an ethnographic approach is in keeping with the growing trend among researchers to use naturalistic methods to investigate social situations.

Chapter 3, section 3.3, suggested that systems theory be adopted for analysing the policy process, and chapter 4, sections 4.6.1 and 4.6.2 proposed that IDEF0 techniques be employed to examine the design and administration process. However Hill, (1997, pp. 128-129) pointed to some researchers advocating a 'bottom-up' approach to the analysis of policy as being preferable to adopting the 'top-down' approach which is inherent to systems theory. They propose that to understand the complexities of the dynamics involved, it is necessary to carry out detailed examination of the activities undertaken. The author argues that the use of successive decomposition in IDEF0 modelling (see chapter 4, section 4.6.2) directed research to analyse at the 'bottom level', what takes place in the design process, and has thus enabled an in-depth understanding of the process to be obtained. That IDEF0 was applied as an integral part of the case study method served to strengthen the ability of the research strategy to examine the design process in fine detail (chapter 4, section 4.6).

Examples of phenomena that have been revealed by such a detailed analysis include the presence of a four stage process in the development of programme rationale (chapter 6, section 6.3.2), the role of ROAME statements in protecting ministers' interests (chapter 6, section 6.4.6), and how officials have interacted with ministers to enhance the likelihood of obtaining their approval for new initiatives (chapter 6, section 6.5). Chapter 3, section 3.3.2, discussed Rhodes's concept of 'producer networks' (Rhodes, 1988, pp.327-343). Analysis of the design and administration process at the detailed level has allowed research to build on Rhodes's observations. Details of the extent of the programme network, that is that part of DTI's 'producer network' supporting the specific tasks contained in programme development and delivery, have been provided (chapter 10, section 10.5.13). As predicted by Rhodes the network was found to be extensive, with a broad range of actors to be involved.

Research has enabled the structure of the network to be defined, and the roles of each of the network participants to be described. Chapter 4, section 4.8.1, set out the generalisablity of the research findings. It is suggested that the investigatory strategy as described in this thesis, could be usefully adopted by other researchers to analyse similar social situations within other organisations. However, as indicated above, the success experienced by the author in adopting the strategy for studying the design process within DTI was largely attributable to him being recognised as a full and trusted member of the community that was the subject of examination. It is proposed that an external researcher would not 'enjoy' this position, taking him or her several years to gain the tacit permissions, and an understanding of the culture, which would be required. Therefore, in recommending his research strategy for wider adoption, the author would make the proviso that its fitness for purpose is reliant on the researcher being perceived by the target community as an established member of the organisation concerned.

Chapter 3, section 3.3.1, referred to researchers viewing policy making as a complex process. The author would argue that his research has lent weight to this view. Study of the process of programme design and administration has shown it to be a complex phenomenon in its own right, and being part of policy making therefore contributes to the complexity of the overall policy

system. Chapter 3, sections 3.3 and 3.5, chapter 8, sections 8.4 and 8.9, discussed the incremental nature of policy development, and how 'incrementalism' as described by Lindblom (1977, pp. 313-317), extends to the level of scheme design. The findings of research further suggest that 'incrementalism' is not restricted to the public sector, but is probably identifiable in the development of commercial policy within organisations lying in the private sector (chapter 10, sections 10.3 and 10.8).

11.2 Strengths and the Weaknesses of the Research Work

Beginning with the weaknesses, there are several avenues of research which the author wished to explore to broaden and further strengthen investigatory findings, but from which he was prevented from studying owing to time limitations. The author wished to interview officials and examine file papers in other government departments, to further test the validity of the design model for wider use. It would have been useful to have extended the literature review, by taking a more 'in-depth' look at analysis of the role of civil servants advising their ministers. This would be backed by the interviewing of officials employed in the private offices of ministers, to better relate the advisory role of the design process, with the general responsibilities assigned to officials.

The role of the Foresight Programme operated by DTI's Office for Science and Technology (OST), in informing policy decisions is a further area which the author wanted to investigate. The Foresight Programme aims to look into the long term future, and determine the priorities for policy setting. It would have been desirable, to have gained a fuller understanding of the role of Foresight in contributing to the design process, by investigating the relationship between the deliverables of Foresight and programme development. A number of 'Foresight' programmes are operated across Europe and elsewhere (Arnold, Boekholt, and Keen, 1999, p. 21), and these are potentially interesting candidates for research.

Chapter 6, section 6.3.2 showed how officials make use of evidence portrayed in white papers, in developing programme 'Rationale'. Again to extend knowledge of the overall process of programme development, it would have been helpful to have studied the interrelationships between

officials engaged in the design process, and those tasked with drafting white papers. Research would also involve study of the mechanisms which inform the process, and hence in turn the design process. From his experience, the author knows that Select Committees can influence policy, and would have liked to have investigated their role in influencing programme introductions.

However these weaknesses are considered to be more than outweighed by the strengths of the research which has been undertaken. Deployment of the case study method has enabled the scope and the essential elements of the design process to be revealed. A rich set of insights into what is involved have been provided. Confidence in the resulting design model can be drawn from the wide range of information sources which were investigated in-depth in the reaching of conclusions. Testing of the model was undertaken to check on its validity, and steps were taken to confirm that its content represented good practice. Research has also been able to capitalise upon the knowledge gained in developing the design model, going on to provide a set of practical proposals to improve the design process and thereby VFM. The proposals are based on proven methods as previously adopted in commerce, and confidence in their ability to deliver better performance is hence held.

11.3 Further Research

A number of areas for further research are identifiable. Clearly the weaknesses described above in themselves represent candidates for further study. As part of investigating the wider role of officials advising their ministers, it is suggested that there is potential to examine how the design process differs from other forms of policy advice. It is proposed that the advising role demonstrated in developing schemes is a product of officials reacting to statements of government policy. Such policy, it is suggested, is normally the subject of careful planning, sometimes whilst a 'government' is in 'opposition'. Policy advising in the context of programme design thus relates to the programme strategies that will best deliver planned Ministerial objectives. This scenario can be contrasted with, for example, officials advising ministers in crisis situations, which often occur without warning. How then the design process should be viewed as an advisory mechanism is a question for research to answer.

A further topic, related to the first, is how should the role of producing ROAME statements in protecting ministers vulnerability be interpreted? Should the process of developing ROAMEs be viewed as an advisory mechanism, or as a device to produce a baseline upon which impact performance can subsequently be evaluated? In a similar vein, how important is the issuing of scheme guidelines to agencies responsible for operating government programmes in protecting ministers from criticism, as against helping to ensure that the contractor delivers adequate performance?

Two additional areas for research are seen. The first is to enrich the knowledge built in this thesis further, by analysing the schemes operated elsewhere in the world, including those funded by the European Commission. It is proposed that the design model be employed as the basis for mapping the procedures involved, which would allow domestic approaches to be compared with those adopted elsewhere. The work would also include benchmarking of the design process in the UK with the processes employed by other countries, to determine what lessons can be learnt for application by governments as a whole. Much is to be gained from benchmarking. The European Commission *Green paper on innovation*, in referring to industrial activities undertaken in different countries states that here "*there is a great wealth of experience*" (EC, 1995, p. I).

Potential to use the design model in commercial applications is thought to be possible. Companies, like governments must monitor the market drivers and design and implement strategies in response to those drivers. Programmes to develop new products will be initiated and managed, and the performance of new introductions to the market analysed and fed back into product design. The overall process, it is suggested, exhibits many of the features of designing and administering programmes. Again, using the design model, it is proposed that research be conducted to analyse the development process within commercial organisations. Depending on what is revealed, the design model could be adapted accordingly, and the good practice lessons identified employed to strengthen the design of programmes within government.

Finally, the second area for research to investigate is the introduction of recommendations made in Chapter 10, section 10.5 for improving the effectiveness of the design process. These hinged around the development of the new 'Design Handbook'; and the application of Knowledge Management in the process of developing schemes. For the former, the author would have liked to have taken a further step towards producing the 'Handbook', by taking the 'good practice' analysis developed in appendix K, and building a set of matrices to:

(a) relate research methods to classification of market failure,

(b) relate delivery strategies to market failure.

The examples considered in appendix K are not exhaustive; indeed the thesis as a whole, including information held in the interview records (appendix B), contains additional content which could be analysed. Further research could take in a wider analysis of programme delivery in support of providing a rich source of information and advice for officials. The work undertaken so far does however, represent a good foundation upon which to build.

Research is also necessary to determine how proposals for introducing knowledge management can be effected. It is envisaged that a pilot system would be initially introduced. Using the proposals laid out in this thesis, investigations would thus be concerned with identifying the research objectives for the project, including what the scope of the pilot should be and identifying the people who are to be the subject of the pilot, together with the development of the research and implementation strategies. In developing research plans, study of procedures adopted more widely in commerce would be evaluated. The deliverables of the research project would be detailed recommendations for how Knowledge Management should be introduced more widely within government, and list the priority areas for implementation. Finally, an interesting area for further research is to measure the extent to which Linblom's observations concerning the incremental nature of policy making in the arena of public policy (Lindblom, 1977, pp. 313-317), are also valid for the development of commercial policy in the private sector.

11.4 Summary

The research has been successfully completed with all research objectives fully satisfied. The research has thus been of value. By revealing the detail of the process of designing and operating programmes within DTI, a contribution to knowledge has been made and 'curiosity' satisfied. This knowledge has been successfully exploited in pursuit of finding ways to improve the current process, with a set of pragmatic proposals drawn up for addressing problems which have been identified. Several worthwhile areas for further research have been suggested, which if followed up should lead to yet greater understanding of the design process, and in the discovery of ways in which we may improve it further for the benefit of us all.

IMPROVING DESIGN AND ADMINISTRATION OF GOVERNMENT SUPPORT PROGRAMMES FOR INDUSTRY

VOLUME 2

APPENDICES

APPENDIX A

LIST OF EVALUATION REPORTS

APPENDIX A LIST OF EVALUATION REPORTS

1.	Metal Working Machine Tool Industry Scheme	1983
2.	Robots In British Industry	1983
3.	Interim Assessment Of The Small Business Loan Guarantee Scheme	1983
4.	Small Business Loan Guarantee Scheme	1983
5.	Study Of The First 50 Failures Under The Small Business Loan Scheme	1983
6.	Assessment Of The Instrumentation And Automation Industry	Pre 1984
7.	Advanced Factory Group: Final Report	Pre 1984
8.	Assistance For The Small Firms Located In Steel, Shipbuilding And Textile Areas	Pre 1984
9.	Assessment OF The 600 Group Scamp Project	Pre 1984
10.	BOTB Joint Venture Scheme	Pre 1984
11.	Case Study In Machine Tools	Pre 1984
12.	Enquiry Into The Benefits Of The Governments Advance Factory Building Programme	Pre 1984
13.	Evaluation Of The Product And Process Development Scheme	Pre 1984
14.	Impact Of The English Estates And The Welsh Development Agency On Private Sector Provision Of Industrial Property	Pre 1984
15.	Interim Assessment Of The Quality Assurance Advisory Service	Pre 1984
16.	Measuring The Effects And Costs Of Regional Incentives	Pre 1984
17.	Promoting Innovation (Micro Electronic Implication Projects)	Pre 1984
18.	Regional Incentives and the Investment Decision Of The Firm	Pre 1984
19.	Services To Exporters Study	Pre 1984
20.	Small Workshop Scheme	Pre 1984
21.	Survey of the Effect of the 100% Industrial Buildings Allowance	Pre 1984
22.	Evaluation of the Ferrous Foundry Industry Scheme	1985
23.	Evaluation of the non-ferrous Foundry Scheme	1985
24.	Textile Machinery Industry Scheme	1985
25.	Wool Textile Industry Scheme	1985
26.	Wool Textile Industry Scheme State II	1985
27.	Economic Assessment of the Electronic Components Industry Scheme	1985
28.	Evaluation of the Clothing Industry Scheme	1985
29.	Evaluation of the Manufacturing Advisory Service	1985
30.	EWG (85) 4 Interim Evaluation Report : The Quality Assurance Advisory Group	1985
31.	EWG (85) 11 Evaluation Report : Teaching Company Scheme Assessment	1985

32.	EWG	(85)	19	Evaluation Report : Interim Review Of West Midlands FMASE	1985
33.	EWG	(85)	26	Evaluation Report : Overview of Evaluation Findings; Support For Lru's	1985
34.	EWG	(85)	31	Evaluation Report : Scarp FMS Demonstration Project	1985
35.	EWG	(85)	33	Evaluation Report : Pre –Production Order Support Programmes	1985
36.	EWG	(85)	34	Evaluation Report :Support For British Geological Survey Programmes	1985
37.	EWG	(86)	21	Evaluation Report : The Teaching Company Scheme	1986
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41.	EWG	(86)	20	Evaluation Report : Support For Software Products	1986
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43.	EWG	(86)	26	Report: Industry's Early Reactions To RDG 2	1986
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46.	EWG	(87)	14	Evaluation Report : CADTES	1987
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50.	EWG	(87)	7	EVALUATION Report : Business Improvement Services	1987
51.	EWG	(87)	10	Evaluation Report : SFI General	1987
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53.	EWG	(87)	18	LRU Evaluation Report : Support for Ferranti	1987
54.	EWG	(87)	20	Evaluation Report;: Interim Review Of The Outward S&T Export Mission Scheme	1987
55.	EWG	(88)	19	Evaluation Report : Support For CNC Machine Tools In Colleges	1988
56.	EWG	(88)	22	Evaluation Report : Map Training	1988
57.	Industry's Early Reaction To The New Regional Development Grant				1988
58.	EWG	(88)	1	Evaluation Report : Smiths Industries Aerospace And Defence Systems	1988
59.	EWG	(88)	2	Evaluation Report : Air R&D Support On Three Project Studies	1988
60.	EWG	(88)	5	Evaluation Report : The BTAS Design Scheme	1988
61.	EWG	(88)	9	Evaluation Report : The Private Sector Steel Scheme	1988
62.	EWG	(88)	10	Evaluation Report : Support For Club Projects	1988
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64.	EWG	(88)	17	Evaluation Report; Steel Castings Rationalisation Scheme	1988
65.	EWG	(88)	20	Evaluation Report : The Micros In Schools Programme	1988
66.	EWG	(88)	23	Evaluation Report :Smart (Phase 1)	1988
67.	EWG	(88)	27	Rationalisation In The Private Sector Of The United Kingdom Steel Industry	1988
68.	EWG	(88)	32	Evaluation Report : Support For Quality	1988
69.	EWG	(89)	2	Evaluation Report : The Handsworth Task Force	1989
70.	EWG	(89)	5	Evaluation Report : DTI Support For Aircraft And Aero – Engine R& D	1989
71.	EWG	(89)	6	Evaluation Report : The Consultancy Initiatives : Phase 1	1989
72.	EPIC	(89)	7	Evaluation Report : Product Design Advice Centres	1989
73.	EPIC	(89)	9	Evaluation Report : First Stage Report On Regional Enterprise Grants	1989
74.	EPIC	(89)	14	DTI/IDS/WOID Evaluation Report : Regional Selective Assistance 1980	1989
75.	EPIC	(89)	17	Evaluation Report Support For Films	1989
76.	EPIC	(89)	18	Evaluation Report : Fibre Optics And Optoelectronics (FOS) Scheme	1989
77.	EPIC	(89)	19	Evaluation Report : National Physical Laboratory Division Of Radiation Science And Acoustics	1989
78.	EPIC	(89)	25	Evaluation : DRSA At NPL Supplementary To EIPIC (89) 19	1989
79.	EPIC	(89)	27	Evaluation Report On The Mineral Intelligence Programme At The British Geological Survey	1989
80.	EPIC	(89)	28	Evaluation Report Of The Mineral Reconnaissance Programme At BGS	1989
81.	EPIC	(89)	31	Evaluation Report :The Industrial Heat Recovery Scheme	1989
82.	EPIC	(90)	11	Evaluation Report : The Demonstration Firms Scheme	1990
83.	EPIC	(90)	35	Evaluation Report : The Flexible Manufacturing Systems Support Scheme	1990
84.	EPIC	(90)	42	Interim Evaluation Report : Managing Into The 90's	1990
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86.	EPIC	(90)	1	Evaluation Report :Research And Technology Organisations	1990
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89.	EPIC	(90)	36	Evaluation Report :DMOM AT NPL	1990
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97.	EPIC	(91)	9	Evaluation Report : Validity Of Analytical Measurement	1991
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99.	EPIC	(91)	12	Interim Evaluation Report : United Kingdom Engines Emissions Consortium	1991
100.	EPIC	(91)	13	Evaluation Report : Gallium Arsenide	1991
101.	EPIC	(91)	14	Evaluation Report : Overseas Seminars And Outward Missions	1991
102.	EPIC	(91)	19	Companies Houses	1991
103.	EPIC	(91)	24	Evaluation Report: Open Systems Technology Transfer	1991
104.	EPIC	(91)	32	Evaluation Report : Overseas Stores Promotions Scheme	1991
105.	EPIC	(91)	38	Evaluation Report : RSA "Small Cases"	1991
106.	EPIC	(91)	39	Evaluation Report : Regional Enterprise Grants Y	1991
107.	EPIC	(91)	46	Evaluation Report : Export Marketing Research Scheme	1991
108.	EPIC	(91)	54	Evaluation Report : Environmental Metrology	1991
109.	EPIC	(91)		Evaluation Report : Consultancy Initiatives; Third Stage	1991
110.	EPIC	(91)		Evaluation Of The Alvey Programme: Final Report	1991
111.	EPIC	(91)	60	Evaluation Report : Olympus Utilisation Programme	1991
112.	EPIC	(91)	62	Evaluation Report : Basic Metrology	1991
113.	EPIC	(91)	66	Summary Of 3 Evaluation Reports : A & Ae Research Programmes	1991
114.	EPIC	(92)	1	Evaluation Report : Advanced Lithography Research Initiative	1992
115.	EPIC	(92)	4	Evaluation Work Programme 1992/93	1992
116.	EPIC	(92)	6	Evaluation Report : Inward Missions	1992
117.	EPIC	(92)	7	Evaluation Report : Technical Action Line	1992
118.	EPIC	(92)	8	Evaluation Report : Consultancy Initiatives Implementation Guidance	1992
119.	EPIC	(92)	9	Strategy For the Evaluation of Research and Technology Organisations	1992
120.	EPIC	(92)	15	Evaluation Report : Warren Spring Laboratory (Limited Circulation Only)	1992
121.	EPIC	(92)	17	Evaluation Report : Technology Transfer Mechanisms	1992
122.	EPIC	(92)	20	Evaluation Report : Iron and Steel Employees Readaption Benefits Scheme	1992

123.	EPIC	(92)	23	Evaluation Report : Support for Collaborative R&D In The Metal Processing Industry	1992
124.	EPIC	(92)	24	Evaluation Report _ High Temperature Superconductivity	1992
125.	EPIC	(92)	25	Evaluation Strategy : Information Technology	1992
126.	EPIC	(92)	26	Evaluation Report : Consultancy Initiatives – Fourth Stage	1992
127.	EPIC	(92)	27	Evaluation Report : Regional Enterprise Grants (RIN)	1992
128.	EPIC	(92)	28	Evaluation Report : Films	1992
129.	EPIC	(92)	29	Evaluation Report: Regional Selective Assistance – Main Report	1992
130.	EPIC	(92)	20	Evaluation Report : Exchange Risks Guarantee Scheme	1992
131.	EPIC	(92)	31	Evaluation Strategy : LINK	1992

APPENDIX B

INTERVIEW RECORDS

APPENDIX B INTERVIEW RECORDS

Interview Number: 1 **Date: 3 November 1988**

Name of Interviewee

Mr Derek Baker

Grade

Grade 7

Position

Section Head, Manufacturing Management and Technologies (MMT) Division

Duration of Time with DTI

Over 10 years

Purpose of Interview

To help place research into context by obtaining historical data on the development of DTI, and to help identify those aspects of government activity which should be investigated. In particular information was sought which would help the author identify those areas of programme development and operation, which should become the focus for research.

Reason for Selection for Interview

During the course of a number of interactions with Mr Baker, the author became aware that the interviewee had gained substantial knowledge of DTI and its approaches to helping industry. Rationale for selecting Mr Baker was that he had spent some 24 years in industry, and 15 years working in DTI. His time within the department had been spent solely on the introduction and management of industrial support programmes. These included both programmes which were the subject of giving grants to industry, and awareness activities. Mr Baker is regarded by his colleagues as having excellent experience in operating both types of programmes.

The length of time spent in the DTI and the variety of work placed him in a good position to provide a historical record of how policy for supporting SMEs had developed. Coupled with his industrial experience Mr Baker was also well qualified to comment from `first hand' experience on the relative success of schemes. Mr Baker is currently responsible for the management of the Towards Integration (TI) awareness programme, a scheme in which he also had responsibility for developing. Mr Baker was therefore considered as being a good candidate to question about the design of awareness activities, which were known to be from personal knowledge to be a major area of DTI's activities.

Duration of Interview

1 hour 30 minutes

Questions Asked

Q1

It would be helpful in drafting the thesis to set work in the context of the history of DTI. Would you please describe what you see as having been the principal stages of development?

Response

Things began with the formation of the Ministry of Technology (Min Tech) in 1965. Along with the Department of Economics Affairs (DEA) Min Tech was referred to as a 'super department'. During the late 1980s', Min Tech was merged with the Overseas Trade Board (BOTB) creating the Department of Trade and Industry (DTI). Present day activities in the area of industrial support programmes have their roots in the old Min Tech; current policy is based on that originally set by this previous department.

Mr Baker recommended the interviewing of Mr John Cammell, Head of MMT Division. Mr Cammell had been with DTI since the formation of Min Tech, and would be able to give further insights on the development of DTI and its work.

Q2

Do ministers influence programme development?

Response

Mr Baker observed that the Labour Government and previous Conservative administrations were interventionist, whereas the present Conservative Government took a non interventionist stance. This had resulted in the introduction of the Enterprise Initiative which was helpful, but not interventionist.

Q3

In developing programmes, what factors in your opinion are primary sources of influence on the process?

Response

Parliamentary legislation is a major influence, in that it provides the legislative framework which authorises the government to use public funds in support of actions it wishes to undertake. Legislation is contained in Acts of Parliament. The department has been, and is, driven by two Acts of Parliament:

a) The Science and Technology (S&T) Act, 1965,

b) The Industry Act, 1972.

The S&T Act was introduced by the Labour Government in the Min Tech days. It has been and remains, the principal vehicle by which the department has been able to fund most of its schemes. Acts of Parliament are divided into sections, and it is Section 8 of the S&T Act which is most relevant. Examples of activities supported under Section 8 are the Support For Innovation (SFI), collaborative R&D, and awareness programmes.

Mr Baker advised that further reading on the history of Min Tech was available in the book by C. P. Snow, title *The Corridors of Power*.

The Industry Act allows selective assistance to be provided to firms. It is Section 7 of the Act which is relevant to DTI's industrial support. An example of support are the Regional Assistance

Schemes designed to maximise employment. Grants were restricted to designated (geographical), development areas. Amongst companies receiving grants were ICI, and Nissan. Grants were also given for Selective Assistance Projects. A number of schemes were funded which were designed to promote the take-up of new technology in selected industrial sectors. Examples of schemes launched are Machine Tools, Textile and Printing Machines, CADCAM, Robotics, and Red Poultry.

Latterly DTI programmes have also become the subject of scrutiny of the European Commission (EC), which acts as a further agency of influence. Member States must not distort competition within the Community with the introduction of their programmes.

Q4

How has the development of awareness programmes progressed over the years?

Response

The Labour Government and previous Conservative administrations have taken an interventionist stance, in contrast with the present Conservative Government which is operating a non interventionist policy. For example greater emphasis is now placed on helping companies improve their management through the award of consultancy grants, under EI.

Turning to the history of awareness programmes specifically, 1967 saw the launch of the Low Cost Automation Campaign. The aim of the programme was to raise awareness amongst SMEs of the need to adopt new technologies. These would be regarded as 'low tech' by 1988 standards. Need was demonstrated by telling companies of the benefits which could be realised, and how it may be used. Examples of technologies pushed were fluidics: fluid power, fluidic logic; and hydraulics.

Another programme introduced at around the same time was the Industrial Technology Programme, which covered topics such as tribology, terrotechnology, corrosion, and materials handling.

1971 saw the introduction of the Automatic Warehousing programme, which featured computer control as the enabling technology. Mr Baker reported that under the scheme he wrote a promotional book; an 'easy to read' text with sections listing computer systems components, giving descriptions of the function of each component, how computer systems work, and how such systems may be employed in automatic warehousing applications. For DTI the book featured 'a first', using colour printing. Examples of component technologies described were punch tape readers, printers, and interfaces.

To help the programme gain the attention of firms, a 'catch phrase' was employed, Not So Much A Warehouse, A Program. The phrase was based on that employed for the BBC TV programme Not So Much A Programme; a 'play on words'.

In 1977 Numerical Control (NC) was promoted, with the formation of the Cad Centre. 1978/86 awareness work saw the promotion of microprocessors with the MAPCON scheme. 1983 onwards featured an increased emphasis on CAPM (Computer Aided Production Management). 1982/83 saw the launch of the CADCAM awareness programme, which also included robotics. This coincided with the IT Year. During 1983/84 Flexible Manufacturing Systems (FMS) was promoted. In 1986 CIMAP, an exhibition/seminarial event was staged to raise awareness of the need to adopt 'open systems' standards in implementing computer communications protocols; that is MAP (Manufacturing Applications Protocols).

Literature on the above activities was not available for inspection.

In discussions Mr Baker mentioned the Production Engineering Advisory Service, operated by the Production Engineering Research Association (PERA). Like the current Towards Integration

(awareness) programme PERA had employed the use of a Mobile Demonstration Unit (MDU) to raise awareness of the advisory scheme. Mr W Brinkley was DTI's project officer for the programme, and he could be contacted for detailed information if required.

Findings:

During the interview it was observed that Mr Baker possessed both depth and breadth in his knowledge of DTI and its programmes within the areas of interest, supporting the efficacy for selecting him for interview.

The ways in which DTI functions to help SMEs are rooted in the formation of the Ministry of Technology in 1965. Min Tech along with the Department of Economic Affairs were referred to as 'super departments'.

In the late 1980s Min Tech and the British Overseas Trade Board were merged to create DTI.

Acts of Parliament are the vehicles by which government is invested with the legal authority to take actions. The Acts which have been introduced to provide the legal framework for the operation of recent and current programmes are the Science and Technology, and the Industry Acts. It is the S&T Act which has been the principal enabler for the funding of past and present schemes. In particular it is Section 8 of the S&T Act which has provided the necessary legislation; covering for example the Support For Innovation and 'awareness' programmes. It was concluded that schemes funded under Section 8 of the S&T Act should therefore be a primary area for research.

Ministers take a non interventionist stance, as is exemplified by greater emphasis now being placed on support for consultancy projects under EI.

A useful historical background to the operation of awareness activities in the area of manufacturing, covering the period 1967 to-date, was given. A number of schemes were described, contributing to the list of potential programmes to be examined.

The draft report of the interview was passed to Mr Baker who approved its content but advised two corrections; details of the book by C.P. Snow, title *The Corridors of Power*, wrong author quoted, and the reference to the Department of Economics Affairs (DEA) had 'Affairs' omitted. The corrections have been incorporated.

Mr Baker also added that much of DTI's work is rooted in activities begun over 100 years ago. Circa 1836 a Select Committee on Manufactured Goods, recommended that we should spend more on training and awareness. The recommendation seeded the setting up of 42 centres to promote manufacturing in the textile sector. The action was in response to a push by the French to sell their products abroad. The centres failed because of the 'usual' problems, underfunding and lack of direction. Further references to this early work could be found in *Schools of Design* by Quenton Bell, and *The future of Industrial Education* by Stewart McDonald.

Mr Baker observed that before inventing new schemes, we should ask what have we done in the past.

Further Action:

To seek an interview with Mr John Cammell, head of MMT Division, who joined Min Tech at its formation and is hence in an excellent position to place current activities in the context of history. Mr Cammell should also be in a position to comment and expand on observations arising out of this interview.

Comments

A copy of the draft interview record was passed to Mr Baker for his comments who confirmed the accuracy of this record.

Interview Number: 2 **Date: 22 November 1988**

Name of Interviewee

Mr J. E. Cammell

Grade

Under Secretary (Grade 3)

Position

Head of the Manufacturing Management and Technologies (MMT) Division.

Duration of Time with DTI

24 years (includes time spent in the previous Min Tech department).

Purpose of Interview

To gain historical information on the development of DTI, to help set research work in context, and to find out the extent to which ministers influence programme design.

Reason for Selection for Interview

In a previous interview [Interview 1], Mr Baker had recommended the interviewing of Mr John Cammell, Head of MMT Division. Mr Cammell had been with DTI since the formation of Min Tech, and would be able to give further insights on the development of DTI and its work. As a Grade 3 he had held a number of senior posts within the department, and is therefore well qualified to provide a history of the political events which have shaped the department and its industrial policy. As a head of a division responsible for the introduction and operation of industry support programmes, he had regular contact with ministers and would be able to comment on their input to the process of programme development, from first hand experience.

Duration of Interview

1 hour.

Questions Asked

Q1

Can you please relate the history of DTI, describing the major stages which have influenced its policy for supporting industry?

Response

Things really began with the DSIR (Department of Science and Industrial Research) which was created in 'the War'. DSIR was staffed by civil servants but run like the Science and Engineering Research Council (SERC). The department assumed responsibility for university grants and management of all non defence R&D establishments; the National Engineering and the National Physical Laboratories (NEL and NPL) for example. Agriculture was excluded. In 1964 Harold Wilson decided that resources would be better vested in departments which held sectoral responsibilities and advanced technology. The decision precipitated the formation of Min Tech led by Frank Cousins, in this year. Other departments formed were the Department of the Environment (DOE), responsible for building, transport and water pollution, and SERC.

Min Tech's responsibilities were focused on the development and application of new technology. Examples were machine tools and computers. In 1964 the Science and Technology (S&T) Act also came into being and provided statuary backing for Min Tech's work. 'Process' and 'product' were two areas covered, with the aim of securing development and improvements throughout industry. Two years later in 1966 the Engineering Industries Division of the British Overseas Trade Board (BOTB), came into Min Tech.

Mr Cammell viewed the S&T Act as indecisive; one could always find something in its content which would allow you do what you wanted to do! With the twin introductions of Min Tech and the S&T Act one now had a department with a funding instrument to carry out what 'you' wanted.

The next major change was the decision to abolish the Ministry of Aviation and transfer all responsibilities to Min Tech. The objective was to bring military and R&D together to gain from the mutual benefits, and the merger massively increased the size of Min Tech. Integration of work was never achieved - changing culture in a defence establishment takes a long time and synergetic benefits were not realised; development requirements are different.

The next change resulted with the creation of the Ministry of Defence (MOD) Procurement Executive, into which the defence related, R&D establishments were transferred.

'Ted' Heath created DTI out of the merger of Min Tech and the BOTB, plus the Department of Consumer Affairs. At this time aviation was hived off to the MOD. Interventionism was played down, but because of the flexibility afforded by the S&T Act, activities continued much the same as they did under the old Min Tech.

Then Harold Wilson split BOTB out of DTI, but they were then subsequently re-merged by Tony Benn.

Mr Cammell contrasted Min Tech with other government departments. A major difference was that Min Tech was not only an administration department, e.g. the Inland Revenue which is concerned with the administration of tax collection. Min Tech was staffed and administered by technologists, and played an active role in industrial development.

Q2

What were the specific objectives of Min Tech?

Response

Specific objectives were probably not there in the beginning. The broad objective was to help UK industry to meet the challenge of a changing commercial environment. In the early '60s industry had come through a supplier led boom; such was the demand so manufacturers did not have to worry about finding a market for their products. For instance you could wait 18 months for delivery of a Morris Minor! In the car industry people were prepared to pay anything to screw more cars out of the factory. Companies also had almost guaranteed markets in the previous Commonwealth countries such as Australia. Continental Europe was still in a mess and provided little competition, whilst UK industry was still in tack from the War.

But competition was hotting up, with our firms becoming uncompetitive through inefficiency arising from their use of old machinery and production methods. Min Tech sought to address problems by raising industry's awareness of the need to adopt new techniques. For example emphasis begun to be placed on the need for information integration in installing systems, an issue also featuring in awareness programmes - the Towards Integration programme.

Q3

What was the success?

Response

Success in 1964 was not achieved as the climate for change did not exist. To install new technologies and adopt new methodologies requires a major change in 'shop floor' attitudes. People saw new introductions as an unemployment threat, and were motivated against change. Government tackled the technology issues ignoring the political and social consequences of automation.

Q4

Are you able to quote any examples of the early schemes, and the lessons learnt?

Response

One instrument was the Pre Production Order scheme, where DTI encouraged firms to develop new products by guaranteeing to purchase the first models, simultaneous with achieving technology transfer. But the programme fell into disrepute because it was difficult to administer. The idea was that DTI would place equipment into firms for a period up to three years, after which the recipient was given the option to purchase the equipment from the department. If he liked it, he would and technology transfer had been affected.

The scheme's designers thought all recipient companies would be pleased to take in the new kit, but it was not always so. The department then continued to have the responsibility to place equipment, if a buyer could not be found. There were other problems. In one instance kit from a supplier (Ferranti) had been installed into a factory (Rover), which was subsequently closed. There was then a dispute as to who should finally pay for the equipment. The scheme was latterly used to pump money into export projects such as the Hong Kong Coal Fired power Station project.

Another area was the operation of the Selective Assistance Projects, which promoted the development and use of technology, by providing grants to user companies to off set the costs of purchase and installation of new technologies. An example was numerically controlled (NC) machine tools.

Q5

How did early policy develop to where we are now?

Response

In the early days emphasis was on the development of products and processes, with single companies targeted. The aim was to improve competitiveness in the market place.

Mr Cammell criticised the early approach. General policy was to operate through 'supply industry' funding to vendors, and then help the transfer of new technology to users. In other words a 'top down' approach. For example push people to buy computers without looking at what they needed. In the machine tool area for example the approach became discredited. Equipment was installed but quickly discarded because it did not meet expectations.

Latterly DTI had been subjected to the influence of EC policy. DTI policy was now dictated by the EC in many areas.

Q6

From your contact with ministers, are you able to say that they provide ideas for programmes themselves?

Response

No they don't. We receive little from them in terms of ideas for new activities.

Comments:

The interview was arranged by prior appointment; its purpose and the areas to be covered relayed to the interviewee prior to meeting with him.

During the course of the interview statements of fact were echoed back to the interviewee, to ensure that they had been correctly recorded.

Findings:

As expected Mr Cammell was able to provide more, interesting detail relating to the history of DTI, and through delivery of this information confirmed the views of Mr Baker, that many of the present industry support activities operated by DTI, are founded on previous Min Tech policy. The increasing role of the EC was also validated. Mr Cammell also confirmed the role of the Science and Technology Act in providing the legislation authorising DTI to undertake its operations. Worthy of note was the observation that the S&T Act had been drafted in such a way as to afford flexibility in its interpretation, thereby allowing officials flexibility in what they had proposed.

In talking about earlier programmes Mr Cammell confirmed the operation of some of those mentioned by Mr Baker, and added to the list the Pre Production Order scheme. He was able to cite as a major problem with earlier schemes the folly of focusing activity on the development of the supply side, by way of promoting the use of new technology. Such an approach fails because the needs of the end user are not sufficiently considered in programme design; for example the adverse reaction to automation by workers. When designing schemes, not to research the needs of those who you are trying to help may therefore be confirmed as bad practice.

The Pre Production Order scheme had demonstrated use of two, joint mechanisms. First the mechanism of guaranteeing to purchase pre production (prototype) kit, as an incentive to encourage the development of new products. The second to achieve technology transfer by offering use of the prototypes to users on a free trail basis, as a way of encouraging them to try out new ideas. However the twin approach had been shown to be subject to serious problems, as user firms could not always be found and the issue of ownership may not be easily resolvable when a trial sites are to be closed. Potentially application of the joint mechanisms represents bad practice.

Ministers tend not to propose new ideas for programmes.

Interview Number: 3 **Date: 28 March 1991**

Name of Interviewee

Mr John Cammell

Grade

Grade 3

Position

Head of the Manufacturing Technology Division (MTD)

Duration of Time with DTI

27 years (includes time spent in the previous Min Tech department)

Purpose of Interview

Staff had been made aware by line management (in meetings and through the copying of minutes), that there was a need to put forward proposals for new initiatives. References had been made to a ministerial directive. Since the general view was that ministers have little or no involvement in proposing new ideas for programmes, the author was curious to see if ministers had promoted the action. Investigation might also reveal a further set of influences on programme design.

Reason for Selection for Interview

As a head of a division responsible for the introduction and operation of industry support programmes, Mr Cammell was involved in top level discussions relating to policy, and would be able to relate how the decision to introduce new schemes had been reached.

Duration of Interview

5 minutes

Questions Asked

Q1

Can you throw some light on how the decision to see what new initiatives may be introduced was taken?

Response

The decision to introduce new initiatives was motivated by Douglas Hogg, the Minister for Industry. Mr Hogg had expressed his concern over the significant underspend on the R & D Budget, opportunity was being wasted. As a result Mr Cammell had met with Mr David Murray, Head of Research and Technology Policy (RTP) Division, to investigate options for a response. It was agreed that earlier proposals for new initiatives which had been previously abandoned, should be resurrected. Mr Cammell had then drafted a set of policy proposals based on previous ideas, which he submitted to the Secretary of State, Mr David Young.

Findings:

The meeting confirmed ministerial involvement, but that the driver was the desire to spend money rather than ministerial interest in addressing specific problems. It is therefore concluded that no evidence of ministerial influence on specific design was present.

Interview Number: 4 **Date: 27 March 1990**

Name of Interviewee:

Ms Paula Freedman

Position

Grade 7

Section Head Enterprise Initiative Division (EID)

Duration of Time with DTI:

10 years

Purpose of Interview:

To gain an understanding of the objectives of the Enterprise Initiative (EI) advertising campaign and the strategies employed in meeting those objectives.

Reason for Selection for Interview:

Ms Freedman was the Grade 7 responsible for introducing and operating the EI advertising campaign, and was therefore well qualified to answer questions relating to the design of the Campaign and its administration. The post also required Ms Freedman to have a good understanding of the overall strategy developed for the delivery of EI, and would thus be able to provide wider background surrounding the operation of the 'Initiative'.

Duration of Interview:

40 minutes.

Questions Asked and Responses

Q1

I am just beginning my research into how DTI through its programmes, help SMEs to become competitive. The Enterprise initiative (EI) is clearly the department's flagship activity, and I would like to begin by examining how the 'Initiative' is promoted. Would you please describe the background leading to the setting up of the high profile, promotional campaign?

Response

The need for a formal high profile campaign arose primarily from the need to meet the targets agreed with ministers for the Consultancy Initiatives (CI), set in the DTI White Paper (HMSO, 1988, p. 25, paragraph 6.6), for the numbers of firms applying for funding under CI.

Q2

What was the principal strategy adopted in the campaign?

Response

The strategy adopted was to have a first tranche of advertising, aimed at raising initial awareness levels of EI, and DTI's programmes aimed at SMEs. One cannot build schemes without the target audience being aware of their existence. To secure a volume response, national advertising on television was employed. Television advertising was backed by promotion in the press, placing advertisements in national and regional papers. Advertisements were also placed in technical journals. Advertising was aimed directly at the firms themselves.

The impact target set for the promotional campaign was that 70% of the target audience of firms, would become aware of EI. Market & Opinion Research International Limited (MORI) have been contracted to track the impact of the Campaign. They prepare and submit six weekly tracking reports to DTI. Tracking focuses on measuring the levels of awareness in firms of the EI booklet, and gauging the numbers of companies employing consultants.

The result of the 'tracking research' are monitored and action taken accordingly. If awareness is shown to be falling, then the level of advertising is increased. Advertising levels are adjusted on a regional by region basis. The Campaign began with advertisements on television of 60 seconds duration, which was then reduced to 30 seconds. Now the time has been reduced to 10 seconds. 'Drip and burst' techniques are employed.

Q3

How would you describe the quality of the responses received to date?

Response

A lot of 'rubbish' has been received with people 'generally' requesting information. Also requests were received from very small companies who would not benefit from CI, and large companies who were not eligible for funding.

Other Points

Ms Freedman also made a few other points of interest. The targets were a best estimate by officials, which were subsequently scaled back by the Secretary of State. Officials had underestimated the number of applications required to identify each CI project. Experience had shown that two applications were required to realise each completed project. Ms Freedman suggested looking at the EI marketing Plan for further information. Spend on the EI promotional

campaign is running at approximately £10 million per year. Plans for the Campaign are reviewed every October, by the Individual Programmes Committee (IPC).

Findings

The need to meet targets agreed with ministers for the numbers of CI projects dictated the mounting of a national campaign using advertisements placed on national television, and in the national, regional and technical press. In developing a promotional strategy it is first necessary to make firms aware of the existence of schemes, before subsequently promoting the individual strands of support. A figure of 70% of the target firms becoming aware of the EI booklet was set as the impact objective. Tracking of awareness levels has been introduced to monitor the impact of the advertising campaign, which is undertaken on a 6 weekly basis. This allows corrective action to be taken. Advertising is stepped up in the regions in response to falling levels of awareness. The promotional campaign began with television advertisements of 60 seconds duration, falling to 30 second, then 10 seconds. 'Drip and burst' techniques were employed.

A proportion of the responses received were from non eligible parties, and officials had also underestimated the number of applications required to realise completed projects. The need to account for attrition is observed. Two applications are found to be required, for each completed consultancy. Approved annually by IPC, the budget for the EI Campaign was approximately £10 million per year, a high level of spend.

Interview Number: 5 **Date: 25 March 1991**

Name of Interviewee

Dr Melvyn Draper

Position:

Grade 6: Deputy Head of Branch in the Manufacturing and Technology Management Division.

Duration of Time with DTI

12 years. Dr Draper joined DTI on 8 January 1979

Purpose of Interview

To look at some of the specific aspects concerning the introduction of the M90s and MPI Programmes. This report records two interviews, one held on 25 March 1991 and a second conducted around the same time.

Reason for Selection for Interview

In his time with DTI Dr Draper has had senior responsibility for the design and operation of several advisory and awareness programmes, including M90s. He has thus gained in-depth experience of the running of programmes and was therefore well qualified to answer questions concerning the mechanisms adopted in scheme development, and programme administration. Furthermore Dr Draper sat on the Advanced Manufacturing Technology Sub-committee of ACOST and from this position had direct experience of how Advisory Councils influence programme design. He was also involved in regular dialogue with ministers regarding the introduction and implementation of schemes, and could thus speak from a position of first-hand experience of the interactions which take place between officials and ministers in the approval process.

Total Duration of Interview Time

1 hour 30 Minutes

Questions asked and Responses

Q1

How did ideas of Managing Into the 90s arise?

Response

For M90s planning commenced around January 1987. Existing schemes were the starting point. In many ways M90s was as a result planned against the findings of the Advisory Council for Applied Research and Development (ACARD) report *New Opportunities in Manufacturing: The Management of Technology*. The former CADCAM and AMT schemes had been set up as a result of the findings of that report, as had the TI (Towards Integration) awareness programme.

M90s followed on from TI, building on the experience this and the CADCAM and AMT schemes. It built on the integration theme but recognised that technology integration was no use without integrated management. For this reason the latter was brought in. Also the Quality, Design, and Education (QDE) Division had successfully run the Quality campaign plus a couple of 'Design' events. Together these had shown a continuing lack of awareness among firms of best management practice, across a broad cross section of areas of business management.

The Grade 3 heads of the Quality, Design, and Education (QDE) Division and the Manufacturing Technology and Management (MTM) divisions then worked together and assembled the bones of a programme, based on the previously run activities. The result was M90s, which comprised a number of modules covering areas such as 'Manufacturing', 'Quality' and 'Purchasing'. Also the design of M90s looked at a project set up by Ingersoll Engineers to set up a Manufacturing Technology Centre using Just In Time (JIT). DTI consulted the support information for the centre which gave an indication of what was needed. In addition MTM (Manufacturing and Technology Management Division) commissioned a detailed report *Manufacturing in the late 1990s* from PA Consultants, which provided a vision of what a best practice company would need to do in ten years time.

Q2

Officials in DTI take steps to ensure ministers are receptive to proposed schemes, thereby assisting in their approval. How was this carried out in M90s?

Response

Originally MTM submitted plans to ministers for extending the Towards Integration (TI) programme. This was undertaken just prior to the announcement of the Enterprise Initiative (EI)'. EI was the Secretary of State, Lord Young's 'baby', which he did not want prejudiced. Lord Young felt TI conflicted with the Consultancy Initiatives, which are a major component of EI. The request to extend TI was consequently rejected. Also TI was not seen as being an integral part of EI, and hence not co-ordinated with other programmes. This was contrary to the Secretary of State's requirements.

A second attempt at submitting plans was left for six months, and approval successfully obtained (these plans described the proposal for the introduction of M90s). The change in ministers' attitudes was described as attributable to two factors. Firstly EI was no longer a brand new idea. Hence Lord Young was not as critical in his assessment of the potential 'conflict' with EI that the introduction of a new scheme might create. Secondly plans for a replacement for TI were shown in the programme ROAME statement to be supportive of EI, and to be an integral part of the 'initiative', by making company directors aware of best practice before or in parallel with the EI consultancies.

On the first point, Dr Draper emphasised how 'timing' of submissions to ministers is important. Officials must judge when it is the right, or wrong, time to go to ministers. Subsequently the ground was prepared for the acceptance of future proposals for the content and continued operation of M90s. Ministers were invited to (and attended) the M90's Manufacturing Action Briefing Seminars (MABs). Dr Draper reported how they had been impressed by those events, and through their attendance they became acquainted with the MABs and the role of M90s. If ministers are kept abreast and involved with scheme operation, they are more likely to be receptive to what officials say. The PA report (PA, 1989) was also sent to ministers and the book was publicly launched by the 'Industry Minister'. Copies of the report were also circulated to the department's deputy secretaries, and relevant committees like ACOST (Advisory Council on Science and Technology, which effectively replaced ACARD).

Dr Draper observed that by these measures, all points of influence in the approval process had become aware of M90s, and what it was achieving. They thus became receptive to new ideas.

Regarding committees such as ACOST, Dr Draper stated that DTI officials often participate in their studies and they send draft reports to DTI for comment. DTI has often influenced the drafting of these reports, and is therefore unlikely to reject their findings.

Dr Draper made several other observations of interest. Firstly, the government's non-interventionist stance meant that ministers do not directly initiate schemes in DTI. They start from the 'stand point' of "why should we support a particular intervention"?

Secondly ministers do not normally have industrial or technical expertise. Ministerial resource is also limited for considering cases for supporting schemes. This leaves them vulnerable to policy mistakes. The ROAME approach was introduced in response to overcoming these difficulties. The development of ROAMEs contains a self auditing and checking process. Ministers must understand all issues in giving their approval. The ROAME process involves proper consideration of every aspect of the approval issues surrounding a proposal intervention. In this way, ministers are protected from potential problems.

Dr Draper referred to the six months delay which was experienced between the end of the current funding for TI, and approval for M90s. There was severe pressure because of the gap, to get a replacement scheme into the field as quickly as possible. As a result M90s was cobbled together quickly, with much development undertaken post initial launch of the programme.

Q3

Turning to MPI, how did ideas for this programme arise?

Response

In March 1989, the Secretary of State said we need some new innovative ideas. Dr Draper thought it would be useful to extend the AMT Consultancy Scheme. Prior to this, in 1988, an internally run study had been undertaken of companies to find out what they required. Also the ACOST study of AMT was in train. ACOST were identifying the problem of SMEs having access to information. However it must be remembered that the predominance of 'academics' on ACOST, who were tending to move towards ideas for a centre of expertise. Not surprisingly, Mrs Thatcher 'hit the report with her handbag'! (The author notes that DTI had had previous bad experience with 'centres', largely due to equipment becoming quickly out of date, and thus destroying the practicality of demonstrations to reflect 'real life situations').

Also Dr Draper sat in on a meeting to discuss the ESRC PICT programme, and became aware of Dr Fleck's research into the reasons for technologies not providing the expected productivity gains. Fleck had produced a report which was used to influence the thinking of a senior economist in the Research and Technology Policy Division in DTI, who had a major influence on decisions relating to programme funding through his membership of the IPC. Therefore when the window of opportunity appeared, as represented by the Secretary of State's wish for new ideas, Dr Draper had

formulated initial thoughts for what became MPI, and the initial evidence supporting a rationale for its introduction. This initial rationale was based on:

(i) Fleck's report (Fleck, 1988) had shown that AMT innovation could only be undertaken in the field.

(ii) From DTI's internal study, it was seen that firms lacked the necessary skills to implement AMT strategically, nor did they have the time to undertake the task properly

(iii) The (first) PA report (PA, 1989, pp. 52-54) had shown the need for firms to develop an integrated approach,

(iv) A need for technology transfer was identified, with poorer firms needing to learn from the best, as indicated by evaluation reports of previous schemes (Flexible Manufacturing Scheme and the Inside UK Enterprise programme).

In developing ideas Dr Draper also called on his experience of operating previous schemes, in particular MAPCON (Micro Electronic Applications Projects Consultancy).

Findings

Dr Draper has provided an excellent set of insights into the approval of M90s, and the development of programmes more generally, especially MPI. Points of particular note are, firstly officials must be sensitive to the timing of putting proposals to ministers, and be aware of their personal priorities. Next, Dr Draper has shown how officials can make the ground fertile for approval by educating ministers and senior officials about the role of schemes and their success. An important way of achieving this is to invite them to participate in scheme events, so that they can witness first hand what is being achieved. The importance of circulating material relating to scheme activities to the decision points in the approval process was also noted. In these ways people become educated and thus more receptive of new, future ideas.

The non-interventionist stance of the government precipitates a situation in which ministers do not normally come forward with ideas for programmes. The important role of the ROAME approach in helping removing ministers' vulnerability to attack if problems arise following the introduction of schemes, is noted.

In developing ideas for MPI, Dr Draper has been able to provide examples of information sources which can be used to inform the design process. That is research reports, Advisory Council reports, evaluation reports, internal studies, personal experience and the experience of others in running activities.

Comments

A copy of this interview record was passed to Dr Draper for comment. Dr Draper recommended some additional observations which were added, following which he agreed the content of the record.

Interview Number: 6

Date: 19 September 1991

Name of Interviewee

Dr John A. Leather.

Position

Member of the Advisory Council On Science and Technology (ACOST) Sub- committee on Advanced Manufacturing Technology (AMT), on secondment from Shell.

Purpose of Interview

To investigate the role of Cabinet advisory councils such as ACOST work to inform policy making in DTI and other government departments.

Reason for Selection for Interview

As a member of an ACOST sub-committee, Dr Leather had gained inside experience of the workings of ACOST, and its activities related to government departments. That he sat on the AMT Sub-committee was seen as particularly relevant, as evidence from this committee was known by the author to have been employed in developing programme rationale. Dr Leather had also spent over a year on the Sub-committee suggesting him to well versed in how ACOST operated.

Duration of Interview

1 hour.

Q1

How would you define the role of ACOST?

Response

ACOST has no executive role. Its status is purely advisory, and is there to help develop policy. ACOST's remit is to identify and consider the national issues in science and technology, and give advice as to how best these may be addressed by the Whitehall departments.

In taking the national view, ACOST deals with those issues which transcend the individual responsibilities of government departments and other bodies involved in science and technology. Thus ACOST normally confines its work to issues which might not be addressed by a single department alone.

Q2

ACOST appears to have a high status. Where do you see this as being derived from?

Response

ACOST reports to the Prime Minister and is owned by the Cabinet Office, which provides and houses the Secretariat. The Secretariat reports firstly to the Chief Scientific Adviser (CSA), who is responsible for providing advice on science and technology matters to the Prime Minister and the Cabinet. The CSA is the main link between ACOST and government, and plays the central role in planning the work of the Council.

Q3

How does ACOST select the topics for study?

Response

ACOST's advice is based on studies of a subject which it might select by itself, or at the request of the Prime Minister. Reports are submitted to the Prime Minister, generally with a recommendation to publish, but sometimes on a confidential basis.

Q4

How does ACOST ensure that its recommendations are well researched?

Response

Membership of the Council comprises senior figures drawn from Academia and Industry, who possess a breadth of expertise and experience within the assigned area of remit. The CSA together with the Chief Scientists/Scientific Advisers of the Whitehall departments also attend full meetings of the Council. Additionally, the Prime Minister periodically meets with ACOST.

Much of ACOST's work is carried out in the Sub-Committees and small Working Groups which sit under the Council. The groups support the work of the Council, with its Sub-committees each studying specific topics falling within the more general terms of reference of the Council.

There are three Sub-Committees in total: the Annual Review, International Collaboration and the Emerging Technologies committees. Membership of the groups comprises partly of persons drawn from Council and partly of members co-opted because they could make special contributions to the subjects under review.

The councils operate on a restricted budget and are thus unable to undertake research themselves. The data collection method employed by a council or a working group is therefore to invite leading representatives to submit evidence, from bodies such as trade and research associations, learned societies, academia, senior executives from companies and government departments. These bodies have undertaken research in the area of interest, or alternatively by the nature of their work have a good understanding of strategic requirements (e.g. a university participating in a number of collaborative projects and leading edge developments). Evidence might be submitted orally or as written reports.

Q5

How is the work agenda set?

Response

The process of setting the work agenda comprises identifying and prioritising the issues. Collection of data to inform the process takes place at various levels and in a number of different ways.

Firstly there is a large element of 'self-setting' of the agenda by ACOST itself. From their informed positions, members of ACOST raise issues which they consider to be of concern. Secondly, the Chairman of ACOST hosts dinners for the Secretaries of State: these dinners are the forum for the exchange of views on the key issues. The Prime Minister has also been known to request particular items to be put on the agenda. For instance Mrs Thatcher asked ACOST to investigate issues relating to the 'Environment'.

ACOST also maintains a dialogue with the Whitehall departments, with several levels of contact. At the middle management level (Grade 6 and 7 levels), staff from relevant departments sit on the working group panels as assessors. An example is the AMT sub-group formed under the Emerging Technologies Sub Committee, to look at and report on the national AMT issues. DTI, having the lead in the AMT area, fields an assessor on the panel. As a member of the panel, DTI has been able to advise ACOST about the identification of the issues, and on the drafting of its recommendations contained in the Report on Advanced Manufacturing Technology.

The work of ACOST also relates to the Whitehall departments through their respective Departmental Advisory Bodies. For DTI, the advisory body is called the Innovation Advisory Board, which is a section within the Research Technology and Planning Division (RTP).

Q6

How does ACOST influence policy development in DTI and the other Whitehall departments?

Response

ACOST works through two main influences. The content of the final reports, sometimes published, sometimes not, represents one of the sources of advice to the Prime Minister, and might be employed in Cabinet decisions relating to policy. The reports contain advice presented as recommendations directed to government departments, which they will often feel the need to respond to in official responses.

Working Papers are a second source of influence. Leading up to the preparation of a final report, discussion documents and draft reports are widely circulated by ACOST for comment, within the relevant departments and elsewhere. These papers stimulate discussion within the departments and hence influence the formation of their thoughts.

In addition, by departments having representation on the sub-committees they are able to influence ACOST's thinking, by raising the issues which they see as important. The need to address these

issues can subsequently appear in final reports, raising them up the political agenda. In this way ACOST provides departments with an opportunity to do something which they would like to do, but for which they had no previous remit.

Findings

Dr Leather was able to provide some useful insights into the operation of ACOST, and how its activities can work to influence policy. Of note is the researching of a broad church of well informed opinion in ACOST developing its recommendations, which lends them credibility. ACOST derives its high status in Whitehall from it reporting to the Prime Minister and its ownership by the Cabinet Office. Through their membership of the sub-committees, departments are able to exploit ACOST's status to place higher on the political agenda issues of concern.

Comments

Certain points were clarified with Dr Leather over the telephone.

Interview Number: 7 **Date: August 1996**

Name of Interviewee

Mr John Oakley

Position

Grade 7

Duration of Time with DTI

Greater than 15 years

Purpose of Interview

To discuss the development of the delivery strategy of the 'Purchasing' module of the Managing into the 90s (M90s) programme.

Reason for Selection for Interview

Mr Oakley was responsible for the development and delivery strategy of the 'Purchasing' module in M90s, and was therefore well qualified to provide insights into the design and delivery process.

Duration of Interview

45 minutes

Q1

Can you explain the purpose of the Purchasing and Supply seminars in M90s?

Response

The Purchasing and Supply seminars represented the main activity in the 'Purchasing' module of M90s. The overall objective was to make firms aware of the benefits of purchasers building closer working relationships with their suppliers. In particular the benefits were seen as arising from:

(i) faster and more effective product development by involving suppliers directly in the design process,

(ii) calling on the strengths of the many to overcome weaknesses in the individual organisations (a win-win scenario),

(iii) being privy to a purchaser's vision: suppliers can work with him to realise the vision, to mutual benefit,

(iv) lower costs through increased efficiency.

Q2

How did the idea for the seminars arise?

Response

The rationale for operating the Purchasing and Supply module of M90s grew from the following observations:

a: Research by Cardiff and Glasgow Business Schools together with others, the details of which are not on file, showed SMEs were unaware of the need to adopt best practice, because they were unaware of the benefits afforded. The Cardiff research was undertaken in support of publishing the book *The Machine that Changed the World.*

b: The need to establish firms capable of working closely with Inward Investor companies, such as Sony.

Q3

What strategy was adopted to put the best practice messages across?

Response

Two series of seminars were held, aimed at senior purchasing staff and at other managers.

The first series comprised 25 one-day events held at different locations around the country. These focused on increasing awareness of the benefits of, and hence the need to adopt, good practice in the purchasing of goods and services. The format comprised of presentations by a 'guru' in Purchasing and Supply, (Dr David Farmer), an industrialist from a nationally renowned company, an industrialist drawn from the local community of firms, and a Cardiff Business School academic.

Using a well known expert and an academic from a leading university helped the messages to be taken seriously. The industrialist reinforced the message from his real life experience, establishing credibility, and thereby building commitment to change. Short formal presentations were followed by an interactive session, when delegates could question the experts. The question time reinforced the messages, helping to build a commitment to act.

The second series of events were half-day workshops again held at various locations across the UK. Again the principle of gradually building commitment in firms was used, with attendees being offered successive levels of help. The format comprised a presentation on supply chain management by a resident expert (Mr 'Ted' Linzey, ex IBM), backed by videos of case study material. The workshops contrasted with the earlier series of events, in that greater emphasis was placed on the 'how' of implementing best practice. Again an interactive session followed, in which delegates could ask questions. The resident expert was also available for private one-to-one discussion at the close of each event.

The facility to discuss topics one-to-one with the expert was particularly important, as it provided firms with an opportunity to discuss solutions to their particular problems.

Q4

How did you choose the sites at which to hold the seminars?

Response

The seminars and workshops were located in areas of the country having low levels of awareness of good practice. Research had shown that in certain areas of the country (Central Scotland, including Fife and Deeside, the North East of England, South Wales, and Telford) suppliers were already working closely with purchasing organisations. Firms in these areas were influenced by, in particular, the large Japanese Investors, who required close working relationships with their suppliers (and the adoption of best practice generally). Elsewhere, the 'partnership sourcing' culture was absent, so the seminars were targeted on these areas.

Q5

Were there any follow up activities?

Response

While running both series of events, officials assessed the success of their intervention through listening to questions asked by delegates. Initially, questioning had the common theme of "what are the benefits?". Later, attendees were largely aware of the benefits, but wanted to know what to do to realise them. Here the success of the workshop format in bringing firms into contact with experts, helped to seed the idea for the Supply Chain Network Groups, which were subsequently introduced.

Findings

Mr Oakley was able to provide details describing the background to introducing the Purchasing Module's Purchasing and Supply seminars.

Comments:

The content of this interview record was checked for accuracy and agreed with Mr Oakley.

Interview Number: 8 **Date: 19 September 1996**

Name of Interviewee

Mr Philip Sowden

Position

Manager of Enterprise Division, PERA International

Duration of Time with PERA International

23 years.

Purpose of Interview

To gain insights into the administration of the Consultancy Initiatives, and a view on the effectiveness of the procedures adopted, from a Scheme Contractor's perspective.

Reason for Selection for Interview

Mr Sowden had responsibility for PERA's administration of the CI Manufacturing Systems Initiative. He also was assigned responsibility for the Quality Initiative, a role which PERA shared with the University of Salford. For the former Mr Sowden's responsibilities included the setting up of the administration systems, such as a consultancy database to support the management of the Initiative. Mr Sowden also had responsibility for running the previous Business and Technical Advisory Services (BTAS), consultancy scheme at PERA. He was hence seen as having in-depth knowledge in the area of interest to the research.

Duration of Interview

1 hour 15 Minutes

Questions Asked

Q1 Before we discuss the mechanisms adopted in running CI, what insights can you provide concerning how ideas for CI arose.

Response:

It should be remembered to begin with, Lord Young thought that DTI's services were its 'best kept' secret, and brigading schemes under a common umbrella, the Enterprise Initiative, was one step taken to improve access. CI played its part bringing together a number of the previous advisory schemes. Next to consider is that the previous advisory schemes were topic based, looking at specific areas such as Robotics and Quality. CI has kept these elements, but broadened them out to take account of the wider management issues. Feedback from previous schemes and 'input' from academia had suggested more emphasis should be placed on 'Management' and 'Enterprise'.

Because of developments in Japan, everybody was saying that firms needed robots. They were seen as the panacea in raising productivity and profitability. However, people forgot to take account of the management issues. For example how installing a robot in a production area impacts on other equipment installed on the 'shop floor'. A welding machine for instance 'expects' the welding piece to be offered to it in a precise place. The welding position is the subject of tight tolerances. A human being has the flexibility of movement to offer the pieces precisely where the welding machine requires them to be, irrespective of relative position. However difficulties have been experienced in using robot arms through their control being insufficient, to position work pieces sufficiently precisely to satisfy the requirements of the welding devices. Firms thus needed to take account of the wider management issues involved in using technologies such as robotics, to improve efficiency.

Q2

What are the precise details of the procedures which were adopted to achieve good management of CI?

Response:

It is essential to ensure that the consultants appointed by firms are fit to undertake work under the scheme. Things began with consultants filling in application forms in which they provided details of their track record, skills, and references who could be contacted regarding the quality of their work. Consultants were always listed as businesses, even if they were 'one man' companies. A minimum period of two years trading as a consultant was sought, or alternatively one year if the head of the consultancy firm had a minimum of five years previous experience as a senior consultant elsewhere.

Four references were sought, and additionally applicant consultants had to provide a sample of four project reports of work undertaken for clients. Senior partners of applicants were interviewed towards assessing the capabilities of the consultancies. Consultants deemed to be suitably qualified were then listed on a database, which held details of each listed organisation and the individual consultants.

Mr Sowden saw PERA's role as that of a project manager, playing a proactive role. The role included helping client firms find an appropriate consultant, guiding them in the choosing and using of consultants. The sequence of events was that first applicant firms would be telephoned following the visits by the Enterprise Counsellors, saying you have a project in mind. They would then be asked if they had identified a consultant. If so, then PERA would look to see if the organisation was listed on the consultancy database. If the consultancy was not listed, or the firm had nothing in mind, then PERA would provide firms with the names of three consultancies off of

the database, from which they could select a consultant. PERA also agreed fee rates with the consultants.

Successful consultants were asked to submit draft proposals for the work which were drawn up against the requirements described in the Enterprise Counsellors' visit reports. PERA issued them with guidance on how to draft project proposals. PERA then looked at the draft proposals recommending any necessary changes. Once any changes had been incorporated the proposals were forwarded to the client firms who then sent PERA a letter of authorisation. Once received, PERA then raised an order on the chosen consultant, for DTI's share of the project costs.

During and following the completion of projects, client firms would be contacted to obtain their views on how their projects went. The information gathered in this way allowed track records of each listed consultant to be built up. The process also allowed expertise profiles of consultancies to be developed, helping in the matching of consultants to clients' needs. Having consultants details recorded on a computer database facilitated the matching function to be undertaken quickly. Matching was also based on the clients location, PERA seeking to identify consultants who were geographically close to the client.

Q3 Who contracted with the consultant and why?

Response

There was one contract which was the subject of DTI's share of the costs, which was made between PERA and the consultant. There was a second, separate contract between the client firm and the said consultant in respect of payment of the client's share of costs. This strategy gave PERA control over the consultants. Monies could be withheld in the event of unsatisfactory performance. CI also represented considerable, potential business for individual consultants. Where consistent under performance was detected firms could be de-listed, losing them access to good, potential business. This provided PERA with the clout to bring offending consultancies 'into line', and to develop good practice for the sector in general.

Q4 How many projects did PERA approve?

Response:

50,002 projects were supported in total (Manufacturing and Quality initiatives combined).

Q5 Are there any other points you would like to have recorded?

Response:

The individual elements if CI were based on the earlier advisory schemes. Hence the previous expertise which had been gained in the running of these schemes, was absorbed into CI which was a strength. Some scheme contractors employed in CI were in many cases the same as those employed for the operating the previous advisory schemes. New contractors were able to learn from this previous experience. Mr Sowden suggested that the principles adopted by PERA were commonly applied by the other scheme contractors.

Mr Sowden added a couple of points. Around 30,000 companies were assisted towards receiving International Standards Organisation (ISO) 9000 accreditation, which provided the UK with a lead in this area. Mr Sowden also added that PERA reported directly to DTI on a quarterly basis. Quarterly reports were prepared which were presented at the quaterly progress meetings with the department.

Comments:

The content of this report was verified by Mr Sowden and his comments incorporated.

Findings

A successful interview. Mr Sowden was able to provide an excellent level of detail surrounding the introduction of CI, and the mechanisms adopted in the day to day operation of the scheme.

Of interest was confirmation of Lord Young's wish to see better awareness of DTI's services, which helped prompt the launch of EI and the introduction of CI. That there was a growing awareness of the need for firms to take account of the management issues surrounding the introduction of new technologies and systems, helped shape the design of CI, and differentiated its elements from the previous advisory schemes.

Important to the operation of CI was assuring the quality of the consultants working under CI. Central was the rigorous checking of consultant's credentials and the listing of qualified organisations on a database. This enabled consultants to be quickly matched to client needs. Service to client firms was enhanced by building experience profiles of the listed consultants and records of their performances.

Interestingly was the principle of the scheme contractor being assigned responsibility for the payment of the DTI share of the consultancy costs, which provided the contractor with a degree of control, derived from its ability to withdraw business from poor performers. That CI was based on previously run schemes, allowed DTI and the scheme contractors to build on previously gained experience.

Interview Number: 9

Interviewee

Mr Peter Munday

Position in DTI

SPTO

Time with DTI

Greater than 10 years

Reason for interview

To gather some examples of good practice in programme design, and how on-going development of schemes has been undertaken.

Reason for selecting interviewee

Mr Munday is an experienced project officer of long standing. He has gained a breadth and depth of experience from working on awareness and R & T programmes, and has been involved in the development and implementation of both types of scheme. The many years spent with DTI enables him to additionally provide historical data, relating to scheme design and operation.

Interview note

This interview report records the points arising in a series of short interviews conducted on 4 October 1996, 23 December 1996, 15 July 1999; each of about 20 minutes in duration.

Q1 (4 October 1996)

I am aware that at the beginning of running the Managing into the 90s (M90s) programme, emphasis was placed on making firms aware of the need to adopt best practice methods in running their businesses, and to then provide them with information on 'how' to adopt good practice methods. What gave rise to the decision to adopt such a strategy?

Response

In running the former Towards Integration (TI) awareness programme (a road show style of seminar based on a mobile demonstration unit), officials became aware of firms not understanding the benefits of adopting best practice, and a lack of knowledge of how to implement good practice methods, through listening to the questions posed by participating firms.

Also, in talking to firms in relation to them applying for grant support, they were often challenged regarding the strategies they wished to take. Frequently officials would point to better, alternative ways of approaching problems, which the SMEs should be thinking about. It was also observed that firms tend to be compartmentalised in their organisation, unaware of the need for integration of the business systems.

From these observations it was concluded that their existed a general lack of awareness in small firms over why they should adopt best practice, and how.

Q2

Talking about the development of programmes generally, what constituted the primary sources of information relating to market failures?

Response

Talking to supplier firms provided a lot of information, as they were able to relate problems experienced by their customers. RTOs likewise with their membership. HEIs and RTOs also used to come forward with ideas for research leading to new products which would provide the UK with a competitive edge. Firms similarly would contact DTI with their plans for innovative research.

Officials made sure that people were aware of DTI funding, by way of encouraging organisations to come forward with ideas. Engendering a close relationship with external bodies also helped, as they would contact officials as the first port of call if they became aware of problems or opportunities for new projects.

Q3 (23 December 1996)

Turning to R & T programmes, what problems did you observe in the design of earlier schemes?

Response

In the 'early days' (circa 1985) the generally held view was that technologies such as Computer Aided Design (CAD) were the panacea for making companies competitive. Introducing technology into companies would sort all the problems out. An example of our encouragement was the Robotic Scheme, where firms could receive grants towards the costs of introducing their first robot system. A number of installations failed because attention was not paid to the 'processes'; that is insufficient consideration was given to how the operation of the new, technology installations related in their operation to the existing systems within the companies.

Q4

What steps were taken to address problems?

Response

In the late eighties onwards systems integration was made an essential feature in the design of schemes. In drafting ROAME statements officials made encouragement of firms to adopt, say, Computer Integrated Manufacturing (CIM), a mandatory requirement for funding. In Research and Technology programmes involving grants for research and development into new products and tools, it was stipulated that deliverables must be aimed towards helping firms achieve better integration of their manufacturing systems. In awareness activities such as those employed in the Towards Integration programme, making firms aware of the need to adopt CIM approaches became the key objective. Latterly in Manufacturing in the '90s (M90s), the integration theme was extended to encompass all business operations.

Q5

Are you able to quote any other examples of changes in the delivery of programmes, and why those changes were introduced?

Response

Experience of running collaborative programmes taught us that it is not possible to think of everything when project proposals are being put together by collaborators. As a result, problems often arise some way into a project's life which go undetected and because corrective action is not taken, programme deliverables failed to meet market requirements. So re-appraisal in the light of initial project work was introduced, to allow work to be re-focused against a better understanding of needs. Re-appraisal normally takes place about nine months into a project.

We also actively encouraged applicants to think carefully about what needed to be undertaken before submitting. The wisdom of thinking about things long and hard was in the PRISM project funded under the System Technology Integration Programme (STIP). The lead applicant spent £25,000-00 of his own money on a study of the requirements, which was used to specify project work in the application. This worked well, with little sorting out to do following the start of work.

Another thing which was observed was that companies were not generally good at putting proposals together. People had difficulty in setting out their ideas. Officials had to spend considerable time with applicants helping them write their proposals, which raises a resource issue. This is still the case, but to help the problem the department produced a summary of the Project Officers Guidelines, in which restricted information was removed, as a guide to applicants in preparing proposals. The guide pointed out the conditions that successful applications needed to satisfy to obtain funding for what they proposed.

Project management was also noticed to be a weakness resulting in poor administration of work, and in turn objectives only partially met. Although the individuals directly involved in project work were academically bright with considerable technical expertise, their skills in management were often low. To avoid the problem DTI started to insist that participants must identify an individual with good project management experience, to assume overall responsibility for the undertaking of work. The requirement was also placed into the department's 'guidelines'. Considerable improvements in performance were noticed as arising out of this step.

Another problem we experienced was that of project work being prejudiced by the inability of individuals forming the collaborative teams to work together, because of personality differences. Officials subsequently made sure that project teams had ample opportunity to meet well before project work commenced, in order that clashes could be prevented.

SPUR was introduced in reaction to the fall in applications experienced after the withdrawal of single company funding under the SFI scheme.

Q6 (15 July 1999)

The Innovation and Technology Support (ITS) Budget Guidelines refer to the market failure 'Risk and Uncertainty'. Here, as you know, officials when determining the case for support, are asked to make a judgement based not only on the technological risks, but also the financial uncertainties. In my experience, historically - back in the late 1980s and until the mid 1990s - project officers, when designing R&D programmes, tended to take the simple approach of asking whether firms had access to the necessary financial resources, either from 'within' or from external agencies. What is your view?

Response

Mr Munday's response was to advise that it was also his experience that project officers took this simple approach, and indeed still tend to think this way. Reasons why a more simplistic view could be tolerated were cited. In the 'early days' there was a lack of venture capital, and therefore risk funding was difficult to obtain. Furthermore the 'banks' were not geared up to make financial decisions on loaning money for innovative projects, as they did not have the technology qualified staff. As a result they tended to rely on DTI to undertake risk assessment, providing firms with loans only if DTI was prepared to award grants. At that time it must also be remembered that 'Europe' and the 'Global Market' were only just 'rearing their heads'. There was hence less pressure on the financial institutions to widen their marketplace. Banks took a more parochial view which focused on advancing their own business agendas, whereas DTI's interests were in promoting 'UK PLC'!

Q7

I observe that in R & D projects, appraisal of applications is normally undertaken by officials. In contrast in consultancy schemes, project appraisal is often undertaken by staff of a Scheme Contractor. What are the reasons for the difference in approach?

Response

In R&D programmes the eligibility issues are complex. There is more to think about in terms of the eligibility criteria. For example you have to judge whether project work is away from the market, the skills of the applicants, as well as whether or not project proposals are conformant with the programme and wider departmental policy objectives. The task is made more complex by R&D projects being very different from each other in terms of their work content. Altogether the complexity of the appraisal task is such that officials are better placed to judge the suitability of applications for funding.

In consultancy programmes interpretation of policy is relatively straight forward. Policy can be simply expressed as to provide help to SMEs generally, it being taken that most are in need of help. There is also a high degree of consistency in the subject matter between projects, and appraisal being comparatively straight forward can thus be undertaken by people employed by Scheme Contractors.

Similar arguments are applied in the monitoring of projects. Complexity of R&D projects and the policy issues involved requires them to be tracked by officials, whereas in the case of consultancy work, projects can be monitored by contractor personnel.

Findings

Mr Munday was able to provide a useful set of background the on-going development of schemes operated by DTI. Of particular note are:

(i) In developing M90s officials had become aware of firms being unaware of best practice and how to implement these methodologies, by listening to the questions asked by delegates attending

the TI 'road shows'. Observations led to the delivery strategy in M90s focusing on making firms aware of both why and how to adopt best practice. Officials also became aware of problems through their day to day contact with SMEs.

(ii) Officials learn from the experience of operating programmes, for example officials witnessed the failure of AMT implementations funded by DTI, because systems integration issues had not been addressed. As a result emphasis on integration became an essential feature of DTI programmes.

(iii) Other examples of features built into programme design as a result of experience are:

- The introduction of project definition phases into R & T projects,
- Recognition of the need to help applicants draft their proposals, and the issue of application guidelines to help off load officials and improve the quality of proposals.
- In appraising projects, to check that the person appointed as having overall responsibility for project work has good management skills, and that participants are able to work together.

(iv) Unavailability of funding often constitutes the reason for support.

(v) Contact with firms, HEIs, and RTOs can be successfully exploited to gain information about R&D opportunities and market failure. Officials made sure that people were aware of DTI funding, by way of encouraging them to come forward with ideas.

(vi) The complexity of policy issues combined with the variety of work experienced in R&D projects, dictates that they normally be appraised by officials. In contrast, appraisal of consultancy projects does not involve interpretation of policy, and given the higher degree of consistency between projects, appraisal is comparatively straight forward and can be undertaken by staff employed by contractors. Similar arguments apply to project monitoring, with officials normally responsible for monitoring of R&D projects, and external staff in the case of consultancy projects.

Comments

The content of this interview were checked with Mr Munday who agreed that they represented an accurate record.

Interview Number: 10 **Date: December 1996**

Name of Interviewee

Mr David Ellis

Position

Grade 7

Duration of Time with DTI

Greater than 15 years

Purpose of Interview

To identify and discuss the delivery mechanisms employed in the delivery of the 'Quality' component of the Managing into the 90s (M90s) programme.

Reason for Selection for Interview

Mr Ellis is the Grade 7 responsible for delivering the 'Quality' component of the M90s programme. He has held this responsibility for several years during which time he has gained in-depth experience of the mechanisms involved, and a good understanding of the rationale for their selection.

Duration of Interview

30 minutes

Questions Asked

Q1

Would you please describe delivery structure adopted for the Quality module of M90s?

Response

In Phase I of M90s the principal activity was a series of one day, Total Quality Management (TQM) seminars. These aimed to help firms understand the concept of total quality and show how it contributes to competitiveness. Each seminar started with an introductory talk explaining TQM and its relation to improving business performance. These deliveries were then followed by a series of presentations dealing with specific aspects of TQM.

Q2

What were the mechanisms adopted to convey the messages, and how did they function to motivate firms to take action?

Response

Four main delivery mechanisms were used in the seminars to convey the awareness messages. First a high profile chairman was engaged, who had good communication skills and knowledge of the subject matter. The TQM seminars employed Vincent Kane OBE, a broadcaster on TV Wales. He had a personal commitment to quality, indicated by him having received the OBE for his part in establishing the Wales Quality Centre.

The second strand was a presentation by a leading expert on quality, Professor Oakland of Bradford University. He assumed the role of expert presenter, which was later expanded, by his being available all day for consultation by delegates. In this way people could ask the specialist questions in private, thereby reinforcing the message content of the events. Thirdly a DTI speaker reinforced the best practice messages, and signposted delegates to other M90s activities and the Consultancy Initiatives. Finally, case studies were presented by representatives of organisations which had adopted TQM. Important to the TQM events was the concept of 'industry people talking to industry people', which helped the transfer of messages by establishing a perception of relevance of programme content in people's minds.

Q3

How was the performance of the TQM seminars viewed?

Response

The approach which we had adopted was reported as well thought of by delegates.

Q4

How were the seminars managed and the audiences identified?

Response

Organisation of the quality events which included audience building, was contracted to a specialist company (IBIS). Of particular interest is that IBIS received no fee from DTI for this work. Under the terms of their agreement with DTI, they charged a delegate fee with their costs underwritten by the department. The seminars were so successful that DTI never had to compensate IBIS; indeed its staff reported that IBIS made a good profit!

Findings

Mr Ellis was usefully able to provide details of how the TQM seminars in the 'Quality' module within M90s were delivered. Fundamental to the seminars putting their messages across was the use of a high profile person to chair the events. Ensuring that programme content would be perceived as relevant and credible was also key, which was achieved through having a chairman having a solid grounding in the subject ('Quality'), and presentations by a leading, academic expert and representatives of case study companies. The importance of having the specialist available for private consultation is observed, as a means of helping reinforce commitment to change.

The value of underwriting contractors running events is observed. It provides them with the confidence to commit, and if successful need involve no payment from the 'Public Purse'.

Comments

The accuracy of the content of this interview record was confirmed and agreed with Mr Ellis.

Interview Number: 11 **Date: 6 December 1996**

Name of Interviewee

Richard Arnott

Grade

Grade 7

Position

Head of Section in the Management Best Practice Branch (MBP) in the Manufacturing Technology and Services Division (MTS), DTI HQ

Duration of Time with DTI HQ

13 years.

Purpose of Interview

To investigate the processes which had been employed in the past to establish evidence of market failure and subsequent programme design. During the interview the opportunity was taken to seek Mr Arnott's views on the differences between Advanced Technology Programmes (ATPs) and General Industrial Collaborative Programmes (GICPs), to confirm the author's understanding.

Reason for Selection for Interview

From 'day one' of joining DTI, Richard Arnott has been directly involved at the 'coal face' in the development and administration of advanced technology R&D and Best Practice related programmes. He has been responsible, both as an SSO and subsequently at Grade 7 levels for programme development and project management, and has built up a wealth of experience in the day to day administration of programmes.

Mr Arnott is a Chartered Engineer, and his understanding of engineering related topics enables him to form opinions related to technical matters which have integrity. He is articulate and able to impart knowledge which he holds. The schemes for which he has had responsibility are viewed by colleagues as successful, and therefore when instances of best practice are quoted they may be recorded as such with a high degree of confidence. The programmes operated by Mr Arnott have been strategic to DTI's objectives, rendering him as a good candidate for interview.

Duration of Interview

45 minutes.

Questions Asked

Q1

You had responsibility for the introduction of the Computer Aided Engineering (CAE) and the Small Scale Computer Integrated Manufacturing (SSCIM) programmes. How did you set about establishing evidence of market failure which these schemes were designed to address?

Response

Officials knew from experience of previous schemes, for example from operating the Small Engineering Firms Industrial Support and Robotics programmes, and the Flexible Manufacturing Systems scheme, that many SMEs were not understanding the impact of, or investing in, technologies that would allow them to compete for business. To help build a better picture of the market failure, specialist consultants ISTEL were contracted to review the international situation on the development of CAE and CIM technologies which were 'scaleable' for use in smaller engineering firms.

The core conclusions were that UK SMEs were falling behind their foreign counterparts, and the requirements of the growing set of Japanese inward investors could not be met by many of the UK subcontracting firms. Also the main European CAE and CIM programmes where often too difficult for SMEs to exploit. Specifically ISTEL found evidence of a market failure, that was that whilst many variants of CAE and CIM systems where available, the investment threshold and integration processes were simply beyond many SMEs. They recommended a range of collaborative 'user driven' projects be established, to develop application software for engineering and production management, with dissemination networks to be established to help broadcast the results.

On the basis of ISTEL's recommendations we put together draft plans for what we wished to undertake to reduce the market failures we perceived. A very important next step was to confirm ISTEL's findings and gain wider views on our proposals. An open meeting was convened to which a wide ranging group of people were invited; HEIs, Computer Aided Design (CAD) vendors, user companies. Amongst invitees were potential programme collaborators.

In the meeting officials presented ISTEL's findings and DTI's proposals based on the consultant's report, for programme activities to help reduce market problems. Those present were invited to give their views on the perceived market failures and DTI's plans. Participants confirmed the consultants views, helped officials tune their ideas and signalled their willingness to participate in planned activities, should DTI decide to go ahead.

The meeting importantly achieved other objectives. Potential collaborators were identified by organisations learning of DTI's plans. Networks of project participants were seeded at the event by people networking during lunch and afterwards. The meeting also helped DTI prioritise the areas of work to be undertaken.

In summary the meeting confirmed the consultants understanding of market failure, helped DTI 'tune' its ideas, and identify the priority areas for activities to focus upon.

An additional measure taken to ensure DTI schemes addressed strategic issues, was to submit programme proposals and project applications for grant funding etc., to the Advanced Manufacturing Technologies Committee (AMTC). This Committee comprised independent members drawn from HEIs, consultancies, and industry, who were experts in the Advanced Manufacturing Technology (AMT) field. AMTC provided views on initial ideas for programmes, perceived market failures and the delivery strategies for reducing market problems. In this way AMTC provided advice and recommendations to officials concerning proposals for new work, including those areas covered by Mr Arnott's responsibilities.

Q2

Returning to the open meeting, are you aware of such practice being adopted elsewhere?

Response:

Yes. The above process was repeated to establish the Smaller Scale CIM (SSCIM) programme which was closely linked to the main CAE activity. Other common practices used to help identify market failures included consultation with firms, and feedback from 'Expert Missions'. Such missions involved specialists visiting countries such as Japan and the United States, with some visits sponsored

by government and others by trade associations. Study tours were also undertaken by individual companies. The visits looked at the status of AMT development and application in those countries. Reports containing the observations of these fact finding visits were often passed to officials, who drew on their conclusions in developing ideas for new programmes.

The reports were useful in highlighting the gaps in terms of competitiveness between UK industry and firms in other countries. 'Market intelligence' collected by our colleagues in the British Embassies and Consulates abroad was also used in determining the gap between the competitiveness of foreign industries and our own.

Mr Arnott also emphasised the value of talking to people in industry and elsewhere in determining market failure.

Q3

How would you define the terms of reference of Advanced Technology Programmes (ATPs) as against the role of General Industrial Collaborative Programmes (GICPs)?

Response

ATPs are theme based. They are wide ranging going across many sectors. SSCIM, and Computer Aided Engineering (CAE) are examples. SSCIM covered the more general set of integration systems and software tailored for SMEs. CAE was about developing integrated 3D modelling and CADCAM to support concurrent engineering.

GICPs tend to involve large projects. CIM 2000 is an example, and was major project developing production management software to support lean production. They were intended to be strategic and more sectorally orientated. Another example is the High Speed Machining Project, which was targeted at the Aerospace Sector and involved the development of machine tools.

Of interest are SEFIS 1 and SEFIS 2 (Small Engineering Firms Industrial Support), which were funded under Section 8 of the Industry Act. The funding concentrated on encouraging engineering SMEs to use Computer Numeric Control (CNC) equipment. The schemes led to the need to introduce the CAE and SSCIM programmes, which aimed to help firms integrate CNC systems into the overall production management process.

Q4

In developing delivery strategies and making decisions on how programmes should be administered, what were the principal sources of reference which you used?

Response

The Project Officer's Manual (the SFI Guidelines) was the main source of reference. These have been developed in the light of introducing R&T projects and represent empirical 'best practice' advice in developing and administering schemes.

Comments:

A copy of the draft interview record was passed to Mr Arnott for his comments. He was able to add several other, useful points. His comments included, he confirmed his acceptance of this interview record.

Findings:

Mr Arnott was able to provide an example of using a consultancy organisation, (ISTEL) to research the nature of market failures. The consultant's findings in this case were employed as the basis for developing two programmes, CAE and SSCIM.

Mr Arnott was able to demonstrate the value of holding open events to help confirm officials understanding of market failures, to tune ideas for negating these failures, and to aid in the prioritisation of work areas. Such meetings also help identify potential collaborators, through organisations learning of DTI's plans and people networking at the event.

Differences between ATPs and GICPs were described. ATPs are theme based, that is activities are undertaken with common themes involving organisations across a number of different sectors. GICPs tend to be sector specific and involve large projects.

Other points to come out of the interview was the use of committees such as AMTC, to help officials formulate ideas for programmes, to aid the process of defining the exact nature of these failures, and to help inform the process of developing programme and project proposals. Mr Arnott was also usefully able to show how one to one consultation with people employed in industry also helps inform the process of programme development. Other sources of information to the process include the reports of expert missions, and the network of science and technology councillors employed in the British Embassies and Consulates. Of note here is that officials do not simply concentrate on determining market failure, but first look for evidence of likely problems by identifying gaps between the UK's performance and those levels being achieved elsewhere. The ISTEL example showed how a consultancy study of the market can be also be used to identify gaps.

Finally Mr Arnott also pointed to his reliance on the SFI Guidelines in developing and administering programmes, and how this guidance represented best practice through calling upon the experience of officials in its drafting. His observations served to confirm the author's view of the importance of this document in the development process, both in terms of its widespread use and fitness of purpose.

Interview Number: 12 **Date: 30 July 1997**

Name of Interviewee

Mr F W Rott

Grade

Grade 7

Position

Section Head

Duration of Time with DTI

9 Years

Purpose of Interview

To confirm the efficacy of involving members of the Individual Programmes Committees (IPC) in the development of ROAME statements.

Reason for Selection for Interview

The official was selected for interview because of his substantial experience in introducing a set of successful programmes; weight of experience and 'success' in getting his views assigned credibility.

Since joining DTI the official has been principally concerned with the development and administration of support programmes for SMEs. During this period the interviewee has been directly responsible for the introduction of new schemes, which are regarded as successful in generally achieving their objectives.

Duration of Interview

20 Minutes

Questions Asked

Q1

Drawing from your experience, what is your view on involving members of the relevant IPC in the process of developing ROAME statements, in order to improve the likelihood of securing approval?

Response

It is considered very important, and best practice, to consult IPC members during the drafting of ROAME statements. By inviting them to comment on drafts and by asking them to advise on issues such as objective setting and delivery strategies, they become champions of what you wish to achieve and supportive of your approach. The value of involvement was clearly demonstrated through observing the passage of proposals whilst attending Innovation IPC meetings. The interviewee had always consulted in the development process, and contrasted his own experiences with those of others who had not. In his case he met with no serious problems and approval was received quickly. In contrast cases where project officers had not previously consulted members, the proposals were taken apart and rejected; i.e. the rationale was challenged and found deficient.

Q2

What form did their involvement take?

Response

Draft copies of the ROAME were circulated and discussions on how issues should be addressed undertaken in one to one meetings. Attention was drawn to the need to target people having a high level of influence within IPC. For example the interviewee had recognised that the director of the Economics Statistics Evaluation Technology Standards Directorate, (John Barber), an economist, and well respected for his knowledge of the issues surrounding programme viability, held sway in the Innovation IPC. Ease of approval was partly attributed to working with one of his Grade 7's, (Ray Lambert), in drafting the ROAME statements. The Grade 7 subsequently advised his director of the efficacy of what was being proposed, engendering his support.

Q3

Can you describe any specific examples by programme?

Response

Examples of where best practice had been applied by the interviewee, were in gaining approval for the Innovation and Technology Counsellors programme (Second Phase), and the Innovation Credits Scheme (Phase 2). The title of a programme exhibiting bad preparation and failing to obtain approval in committee, was the Focus Technical programme.

Comments:

Interview impromptu; held as a result of the subject arising during the course of official discussion.

A draft of the interview was passed to the interviewee for checking on 1 August 1997. He approved that which was reported and concluded. The interviewee added that in some cases the results of consultation had been ignored, which had led to proposals being unsuccessful. He considered it generally important that officials were made aware of the rationale for consultation in the drafting of ROAME statements and incorporating and taking into account comments received.

Findings:

The interviewee supports the view that it is best practice to consult the decision makers in IPCs, in the drafting of programme proposals. Consultation is important in easing the path to approval. The credibility of consultation being labelled as best practice arises from the ability of the interviewee to quote from direct experience, where he was able to cite specific examples of the positive contribution of doing so, as against the negative effects of not so doing. Attention was drawn to the particular need to target those who hold sway in committee, and/or those who are able to influence the opinions of the 'mandarins'. The importance of making officials to be aware and understand of the need to consult and take account of comment, was emphasised, an issue which the proposed Handbook would address.

The process of consultation was identified as inviting decision makers to comment on draft ROAMEs, and seeking their advice on how design issues should be addressed.

Interview Number: 13 **Date: 6 August 1997**

Name of Interviewee

Mr. F W Rott

Grade

Grade 7

Position

Section Head

Duration of Time with DTI

9 Years

Purpose of Interview

To ascertain whether or not officials when developing programmes, always research 'the literature' to look for evidence of market failures.

Reason for Selection for Interview

The official was selected for interview because of his substantial experience in introducing a set of successful programmes, weight of experience and 'success' in getting his views assigned credibility.

Since joining DTI the official has been principally concerned with the development and administration of support programmes for SMEs. During this period the interviewee has been directly responsible for the introduction of new schemes, which are regarded as successful in generally achieving their objectives.

Duration of Interview

10 Minutes

Questions Asked

Q1

Inspection of 'the literature' undertaken during the course of research, has revealed much evidence of the market failures which DTI has addressed in operating its programmes. This evidence often serves to confirm the efficacy of DTI's interventions. Whilst developing ROAME statements the author and his manager researched the literature, but he feels that consultation to gather evidence of failures is not widely practised by officials. What is the view of the interviewee?

Response

The interviewee certainly had not, and was of the impression that most others did not also. He stated that rationale would be better founded if research of the literature was undertaken.

Comments:

Interview was impromptu.

Open questioning was adopted.

Understanding of interviewee's views was echoed back to him and confirmed as correct.

Interviewers Report

Findings:

The interviewee confirmed that 'the literature' was not normally consulted, meaning that a rich source of information was being ignored, and thereby possibly prejudicing programme design. The author concludes that in the proposed Handbook officials should be signposted to 'the literature'.

Interview Number: 14 **Date: 15 July 1999**

Name of Interviewee

Dr. Peter Bentley

Grade

PR11 (Formerly Grade 6).

Position

Director - Finance and Assessment, Business Link Directorate

Duration of Time with DTI

Dr Bentley began his career in the Civil Service in 1975.

Purpose of Interview

To discuss the role of Acts of Parliament in the delivery of support programmes.

Reason for Selection for Interview

Dr Bentley was selected for interview because he has had direct responsibility for the development and management of support programmes over the years, many of these as a senior manager. In discussions with him and also in listening to his interjections during meetings, it was clear to the author that he has built up a wealth of experience, is able to analyse situations, and compare and contrast the various issues in debating policy. Dr Bentley is noted for his attention to detail.

In his capacity for overseeing the financial control of programme budget expenditure for the Business Link directorate, a position he has held for four years, (plus previous financial management responsibilities) Dr Bentley has obtained an in-depth understanding of government policy relating to programme funding, including the legal basis for the provision of that funding.

Duration of Interview

10 minutes.

Questions Asked

Q1

You have said previously that the Industry Act of 1982 provides the legal authority for us to support the services provided by the Business Links (BLs) and the Regional Supply Offices (RSOs). In particular you pointed to Part IV of the Act, Section 11- (1), "Advice for Business" which refers to the powers of the Secretary of State to make provisions for the giving of advice to firms. Would you please confirm that this forms the basis of our ability to fund the central remit of the BL and RSO programmes in the giving of information.

Response

Providing information is a form of giving advice. I prefer to summarise what the BLs and the RSOs do by viewing their activities as providing an advisory service.

Q2

Presumably the former Consultancy Initiatives etcetera obtained their legal basis from the Industry Act?

Response

Yes, again they were about advising firms, which Section 11 (1) is about. These schemes, as with BLs, are considered as 'advisory services', because firms are 'advised' but it is up to them as to whether they use the advice or not.

Q3

I note from the Business Link ROAME statement, that reference is also made to the Employment Act. What is the reason for this?

Response

Business Links, when determining how firms might improve, may recommend training and signpost a company to a Training and Enterprise Council (TEC). The TECs provide training for staff in firms under the provision of the Employment Act. In signposting firms to TECs for the training, they are acting as an extension of the TECs' training remit, and derive their authority to do so also from the Employment Act.

Comments:

A copy of this report in draft was given to Dr Bentley, who confirmed that he was in agreement with its content.

Findings:

A satisfactory interview which achieved its objectives. It was confirmed that the 1982 Industry Act provided the legal authority for the running of DTI's previous consultancy schemes, BLs and RSOs. Emphasis is placed on these schemes being advisory in nature, where no compulsion is placed on participating firms to use the advice which they receive.

Interview Number: 15 **Date: 20 July 1999**

Name of Interviewee

Dr. Peter Bentley

Grade

PR11 (Formerly Grade 6).

Position

Director - Finance and Assessment, Business Link Directorate

Duration of Time with DTI

Dr Bentley began his career in the Civil Service in 1975.

Purpose of Interview

To discuss how ideas for the Business Link programme arose.

Reason for Selection for Interview

Dr Bentley was selected for interview because he has had direct responsibility for the development and management of support programmes over the years, many of these as a senior manager. In discussions with him and also in listening to his interjections during meetings, it was clear to the author that he has built up a wealth of experience, is able to analyse situations, and compare and contrast the various issues in debating policy. Dr Bentley is noted for his attention to detail.

In his capacity for overseeing the financial control of programme budget expenditure for the Business Link Directorate, a position he has held for four years, (plus previous financial management responsibilities) Dr Bentley has obtained an in-depth understanding of government policy relating to programme funding, including the legal basis for the provision of that funding.

He has been involved with the Business Link programme since its inception.

Duration of Interview

10 minutes.

Questions Asked

Q1

It has been reported that the idea for developing the Regional Supply Office (RSO) programme arose because of an intervention by the past President of DTI, the Rt. Hon. Michael Heseltine. It has been said many times in Business Link Directorate, that similarly, Business Links was the President idea. Are you able to confirm that this was indeed the case?

Response

Dr Bentley reported that the Business Link example was not as straight forward as in the RSO case. In the early 1990s there was a 'groundswell of opinion' which said that in terms of organisations delivering services to SMEs, things were getting very confusing for the customer. At the time organisations such as Training and Enterprise Councils (TECs), Chambers of Commerce, Trade Associations, and Enterprise Agencies, were all delivering business support services for SMEs.

The idea for addressing the problem by creating One Stop Shops which would provide a single point of access to business services, was in fact described in the 1992 Labour Party Manifesto, but not that of the Conservative Party. However following the re-election of the Conservatives, the President asked his officials to develop and implement the One Stop Shop programme. He subsequently agreed that the One Stop Shops should be branded as Business Links. The President was a wonderful 'parent' for Business Links, taking the attitude with his staff that if you haven't the money, then find it! Holding his position for a total of three years he was able to see developments through to the launch and subsequent running of the 'Links'.

That he was such a champion of the programme helped see events through to the operation of a successful scheme. It is important to note however that he was instrumental in initiating the programme, rather than it being his original idea.

Dr Bentley expressed his view that the Business Link programme probably would not have been initiated if Michael Heseltine had not been appointed.

Comments:

A copy of this report in draft was given to Dr Bentley. Dr Bentley recommended one change which was incorporated, following which he was happy with the content.

Findings:

Dr Bentley was able to confirm that Michael Heseltine was responsible for initiating the Business Link initiative, but in this he was instrumental, rather than being the creator of the idea. The interview also provides an example of a scheme being developed in response to a well defined market failure, in this case the difficulty experience by firms in accessing help due to confusion in the marketplace.

Interview Number: 16 **Date: 19 July 1999**

Name of Interviewee

Timothy Roberts

Position

Manager of the Regional Supply Office, West Midlands

Duration of Time with DTI

1 Year

Purpose of Interview

To identify how ministers asked for the introduction of a supplier matching service.

Reason for Selection for Interview

Mr Timothy Roberts was seconded to DTI's previous Competitive Division as an industrialist in early February 1994. He was recruited in a senior management role at the Grade 6 level, and assumed a high level of responsibility. He held the position for one year.

Mr Roberts was given the task of overseeing the design of the Regional Supply Office (RSO) programme in its formative stages of development. His seniority together with the timing of his involvement in the project, places him in a strong position to be able to report on matters concerning the initial development phases of the RSO programme.

Duration of Interview

15 minutes

Questions and Answers

Question 1

You have mentioned in the past at RSO Managers meetings, that the idea for the RSO programme was initiated by ministers. Would you please elaborate?

Response

Mr Roberts reported he was not present when the actual 'event' took place, but was able to say with confidence what happened, as the 'story' had been reported to him by those present at the time. In November 1993 the President of the DTI, Rt. Hon. Michael Heseltine, whilst at a dinner with industrialists in Scotland, was asked by a large corporation why it was that companies in his group could obtain public assistance in the finding of suppliers in Wales and Scotland, but not in England. The Minister replied that he was unable to answer the question, and on his return to the department, asked his officials to investigate, indicating his keenness to provide assistance in England.

Mr Roberts continued, mentioning that officials then carried out an investigation to determine whether or not English companies were being disadvantaged and if so, should a source of supply service be introduced, and what delivery strategy should be adopted. To help answer these questions a survey was commissioned to determine likely interest, would purchasing organisations pay for the service, and what the user requirement was. Among findings were that firms were being disadvantaged, the need for a source of supply service was confirmed, but companies would be unlikely to pay for the service.

Comments:

The interview was conducted over the telephone. Mr Roberts was given a copy in draft of this report, and confirmed that he was happy with its content.

Findings:

The above example provides a clear case of a minister putting forward an initial idea for a scheme, which subsequently matured into a launched programme. Mr Roberts was also able to provide an instance of officials of commissioning surveys to help determine market failures (English firms disadvantaged through lack of a source of supply service), and confirm the need for the subsidised sourcing service to address this failure.

Interview Number: 17 **Date: 23 July 1999**

Interviewee

Dr Ian Harrison

Grade

PR 11 (Formerly Grade 6)

Position

Deputy Director, Management Best Practice Directorate

Duration of Time with DTI

13 years. Dr. Harrison joined DTI on 2 October 1986.

Purpose of Interview

To investigate instances of Cabinet Office Advisory Councils seeding programme ideas, and to confirm difficulties with tapered funding.

Reason for Selection for Interview

Dr Harrison has been employed in DTI for a long period of time. In day to day dialogue with the official the author has become aware that Dr Harrison has built a substantial weight of experience in programme development, and is a good communicator. The range of posts he has held enables him to discuss, from first hand experience, both the political and 'market failure' aspects of scheme introduction. His posting in the Innovation Unit (IU) of the Research Policy and Technology (RTP) Division is particularly relevant, as here he had overall responsibility for policy development. Dr Harrison was therefore selected because he is able to base his comments on sound knowledge of the issues involved.

Duration of Interview

15 minutes

Questions Asked

Q1

Are you able to provide any examples of where the Advisory Councils such as ACOST (Advisory Council On Science and Technology), have seeded ideas for programmes?

Response

The setting up within DTI of the Innovation Advisory Board arose out of the work undertaken by ACOST, in preparing their report *The Barriers to Growth* (ACOST, 1990). The decision to set up DTI's Innovation Unit was another decision which arose from ACOST/IAB (Innovation Advisory Board) work. References to the Innovation Advisory Board are likely to be found in the DTI Annual reports between 1980 and 1990.

Q2

Are you aware of any specific schemes?

Response

Dr Harrison mentioned the joint DTI/DES Regional Technology Centre (RTC) programme, was built on an existing scheme started by the then Department of Education and Science (DES) in 1987, and subsequently developed as a jointly funded initiative.

Q3

In previous conversations with you, you referred to difficulties experienced with applying the principle of 'tapered funding'. Would you please describe the problems?

Response

Dr Harrison related his experience of setting up the Regional Technology Centres (RTCs). Tapered funding was applied over a period of three years. When the RTC initiative was being developed, officials were under management pressure to ensure that the department fully spent its financial allocations within the first financial year, a consequence of the Treasury's Rules on 'Annuality'. In consequence, grants to RTCs were front loaded, with 50% to be spent in the first year.

Unfortunately the decision failed to take full account of the time and effort needed to set up and establish such information centres (finding accommodation, recruiting staff, building up networks of clients and providers etc.). The set up activities extended well into the second year. Many of the RTCs were not fully operational during the first year, and could not up use their full allocation of funds. Annuality prevented carry over of residual funds into the following year. Remaining funds in year two were insufficient to support the outstanding 'set up' work. Dr Harrison believed this was a reason for the subsequent failure of a number of Centres. Moreover most commercial payments are made in arrears, and the RTC projects tended to slip behind schedule. This prevented payment for work undertaken at the extreme end of the financial year, adding to problems.

Comments:

A copy of the draft meeting record was passed to Dr Harrison for comment, and he replied that he was content.

Findings:

Dr Harrison was not able to cite examples of an Advisory Committee seeding the introduction of a specific programme, but was able to provide two good examples of ACOST triggering action within DTI. In the case of the former, Dr Harrison's response lent weight to the authors view that Advisory Committees help officials in providing evidence in support of programme strategies, rather than being primary generators of ideas.

Dr Harrison also provided an example of officials building on existing programmes in introducing new schemes. He was also able most usefully, to demonstrate the dangers associated with application of tapered funding.

Interview Number: 18 **Date: 22 September 1999**

Interviewee

Dr Ray Lambert

Grade

PR11

Position

Deputy Director and Economic Advisor: Technology and Innovations Policy, in DTI's Innovation Policy and Standards Directorate.

Duration of Time with DTI

Greater than 15 years

Purpose of Interview

To investigate the mechanisms which are in place to ensure that lessons learnt in programme evaluations, is widely accessible. To then discuss enhancements to current arrangements which would improve the department's use of its knowledge of programme development and delivery.

Reason for Selection for Interview

A qualified economist, Dr Lambert has been involved in advising DTI directorates in the monitoring and evaluation of programmes over recent years. His opinions and advice are well respected throughout the department, and is regarded as a leading specialist in evaluation strategy within DTI. During his time with DTI he has built a wealth of experience in matters relating to programme performance, making him an excellent candidate for interview.

Duration of Interview

50 Minutes.

Questions Asked

Q1 I am aware of steps being taken under the guise of knowledge management, to bring together the knowledge of best practice in programme development and operations, so that such knowledge may be widely shared. What arrangements do you consider to be in place?

Response:

The problem of how best to collate and then analyse the findings of evaluation, so that best practice in programme development and delivery can be determined and disseminated, is something which has been thought about for a long time. There are however difficulties, some conceptual, some practical. For example, if you determine what is best practice in selling apples and pears, how do you know that the same approaches will allow you to sell bananas better? A further difficulty is that circumstances change. New ministers bring with them new priorities, which can alter the strategic relevance of evaluation findings. For example an intervention which secured only marginal or no benefits, may nonetheless be viewed as potentially valuable in the light of revised departmental objectives.

Q2 Is it practical to try and derive best practice from analysing evaluation reports?

Response:

All evaluation reports are inevitably narrow in their subject, they tend to look at single programmes, and you need something which is more comprehensive. This requirement was realised a couple of years ago, with the formation of the ES (Economic and Statistics) Directorate Core Unit.

Dr Lambert advised looking at the report of the Business Support Working Group Christopher Moir was the economist.

When secretary of the Evaluation Policy Improvement Committee (EPIC), Dr Lambert reported that a database of evaluation reports was set up. The database contained the summaries of the main findings of evaluation reports, which officials could look across and see quickly what had previously worked. In practice, this was used by evaluators but not by programme or budget managers.

Q3 What happened to the database?

Response:

It was not continued by subsequent Secretariats. It was very much my project and when I subsequently moved on, it was not continued. There were other factors. To be of use there has to be coherence in reporting. Performance is judged against the background of an intervention meeting policy objectives. One can learn by looking across schemes that have policy objectives in common. Coherence between successive evaluations thus relies on consistent policy. Because of the abrupt changes in policy which were experienced, coherent reporting was not possible and the database fell out of use. The application of previous evaluation results will always run into the question of lack of relevance to newer departmental objectives or more specifically to a new generation of particular programmes - current situations in markets tend to be viewed by people as different from the past, and old lessons hence cannot be applied.

Q4 Can anything in reality be done?

Response:

Dr Lambert disagreed with the lack of relevance. Much can be learnt from what has been done before, as many of the present issues when analysed have much in common with previous problems, if the analyst is able to step back and look at the fundamental economic issues and at the generic type of intervention. To give one example, there is an empirical regularity in the time path diffusion of new products and new technologies. Although the elapsed time from introduction to maximum take up can vary, the pattern tends to be very similar across very different products and processes. The analyst can bring this regularity to bear in understanding and evaluating the effects of technology dissemination programmes.

Q5 Do you see other difficulties?

Response:

There is a further tension. Financial Resource Management (FRM) say there is a need for comprehensive, across the board evaluation, but current management philosophy is to delegate responsibility for administering programme budgets down the chains of command. Moving towards a more centralised framework for evaluation, which would enable comparisons of value for money or contribution towards Departmental Public Service Agreement (PSA) objectives seems to run counter to this philosophy, and is in effect being resisted by line managers, which evaluation specialists are also expressing doubts about the scope for a common methodology across types of programme.

The greater delegation of management responsibility, with its focus on financial administration, has tended to reinforce the existing structure of evaluation where the evaluators - mostly the economists working on particular policy areas in line directorates, plus the Assessment Unit (AU) in the Innovation Policy and Standards Directorate (IPS) - have responsibility for evaluating the schemes for which its directorate is responsible. Evaluation staff are employed as team members of the directorates, reporting to the Director, who is normally also a budget holder. The process is intended to be co-ordinated by EPIC, but its touch is too light to achieve a more strategic approach to evaluation that emphasises central resource allocation for the department as a whole, rather than individual budget or programme management as the main use of evaluation results. Knowledge management might be one way of overcoming this 'silo mentality', although one has to bear in mind that knowledge management is today's fad, no doubt to be replaced by another management 'buzz word' before too long.

Thus at present, the way evaluation units are structured, means that evaluation is not only programme but importantly also budget specific. Therefore, in Dr Lambert's opinion, evaluation is currently weighted towards informing budget management, with feedback into 'programme'. This poses problems, owing to differing interpretations which can be placed on the findings by the various evaluation units. For example staff responsible for budget management may interpret evaluation findings as meaning an activity does not represent value for money. Conversely a programme manager might say there are a few weaknesses, but these can be overcome with modifications to the delivery strategy.

Q6 What attempts have been made to overcome the problems of different evaluation agendas?

Response:

Clearly there is a departmental agenda, which is more concerned with evaluating programme strategies in terms of their ability to meet the department's policy objectives. This is why EPIC was set up in the early 1980s', as a follow on from FMI (the Financial Management Initiative). The role of EPIC was to ensure evaluations were 'up to scratch', and to then draw broad lessons.

The broad principles intended to apply to evaluation across government departments is set out, inter alia, in the H.M. Treasury Green Book . Because of the Treasury's intellectual history, the

evaluation sections tend to be about project rather than programme evaluation and DTI officials generally pay lip service to the 'Green Book' but work in their own well established tradition.

The detailed consideration of evaluation plans for individual programmes and of each evaluation report has in the last few years been delegated by EPIC to and Evaluation Methodology Group (EMG) chaired by a Grade 5 Economist. This still has the problem that there is usually a debate between evaluators, programme managers and the chairman, plus, to a limited extent, FRM, rather than a discussion involving a wider range of departmental interest groups. This group informs future policy making by feeding its conclusions on Evaluation to the relevant IPC.

The evaluation culture is now well embedded, but there is a need to move on. We need to see if we are achieving our broad policy objectives. Because of the current structure where you have a number of essentially independent, evaluation units you have a situation in which people want to do things in different ways, and determining best practice across the pitch is thus difficult to achieve.

As a first step, evaluation staff in the separate units could be brought together into a single evaluation unit. This approach was mooted when evaluation was first formalised with the establishment of EPIC's predecessor the Evaluation Working Group (EWG) in 1984, and rejected because of the importance attached (as it still is by some) to evaluators being knowledgeable about the policy areas they evaluate. The problem of real or apparent regulatory capture was to be dealt with through the EWG (now EPIC).

The conclusion that evaluation should be "... strengthened and moved nearer the centre of the department ..." has now been adopted by the Departmental Steering Group (DSG), but details of how are yet to emerge. An option is for a centralised unit to be housed in FRM, to use the clout of the finance managers.

The single evaluation unit could look across past schemes and draw out the best practice lessons. However there is a danger of becoming too backward looking. There is a need in a modern government department to undertake forward policy reviews - a theme in discussions of a more strategic approach to evaluation is that it should be seen together with research into markets and industries as informing departmental objectives and how to achieve them, focused on what activities are likely to bring about economic benefit in terms of raising Gross Domestic Product (GDP) or the difficult area of wider economic benefits, rather than confining attention to traditions, for example post evaluations. This is no doubt an over ambitious agenda.

During the interview the author referred to the requirement in the HM Treasury 'Green Book', for officials to draw on the lessons learned across Whitehall. Dr Lambert was asked if DTI officials read the evaluation reports of the Other Government Departments (OGDs). It was Dr Lambert's view that they tended not to. He expressed the view that they tended to work in their own established tradition, tending to ignore what is undertaken elsewhere in government.

Comments:

The interview was informative, and filled in a number of gaps in the author's knowledge of the evaluation process within DTI, and how the process helps to inform policy making. The issues surrounding evaluation were described, the problems with the current system discussed, and some useful ideas identified for improving the process.

The draft note of the meeting was passed to Dr Lambert for comment. His comments were included and he confirmed the accuracy of this interview record.

Findings:

Problems exist in attempting to draw best practice lessons in programme operation, by looking across evaluations. In part the problem is conceptual. It has to be shown that what has been learnt in the past is relevant to addressing 'present day' issues.

Circumstances change and new priorities emerge, which can alter the strategic relevance of evaluation findings. This situation is not helped by all evaluation reports being narrowly focused, being the subject of single programmes, and steps need to be taken to provide something which is more comprehensive.

Steps have been taken to address problems. A database of evaluation reports was previously set up containing the summaries of the main findings of evaluation reports which officials could look across to see what had previously worked. In practice, this was used by evaluators rather than programme or budget managers, the people directly concerned with the development of delivery policy. [Restricted access to the latter by officials was possibly the primary cause]

There is a further problem in drawing conclusions on best practice, by comparing evaluations. Difficulty arises from a lack of coherence in reporting, which in turn results from continual changes in policy that in the strategic sense (meeting DTI's objectives) makes comparing like for like more difficult. There are also practical difficulties. People will instinctively argue the relevance of previous evaluations to current, market situations.

The lack of relevance argument is not credible, as much can be learnt from what has been done before. The proviso is that analysis is conducted from the perspective of identifying and addressing the fundamental economic issues, and to then look at how, generically, mechanisms function to address these issues. This approach allows interventions to be compared independent of policy change, and regularities between programmes to be discovered and best practice conclusions to be drawn.

There are factors which mitigate against across the board comparisons at present. Delegation of responsibility for administering budgets down the chains of command, has resulted in a structure in which the evaluation is 'distributed'. The evaluators are mostly working in particular policy areas within the line directorates, (plus the Assessment Unit (AU) in IPS). They thus have responsibility for evaluating the schemes in their particular area, and operate largely independently of each other. It is first observed that, overall, the current structure leaves the evaluation process largely uncoordinated, leaving people to do things in different ways.

Secondly, the focus in delegated responsibility on the administration of budgets, causes the evaluation process to be weighted towards informing budget management. This creates tensions between programme and budget managers, over differences in interpretation of evaluation findings. Budget holders will focus on the value for money related findings of evaluation. On the other hand programme managers will look more closely at the operational findings. In summary, determining best practice across DTI is difficult to achieve.

There are arguments for placing the evaluators within the individual directorates. They become more knowledgeable about the policy areas of the directorates, and are thus better qualified to make credible judgements on the effects of policy, than staff placed centrally.

Some procedures are in place to help determine and disseminate best practice in evaluation work. EPIC was set up in the early 1980s' in response to FMI, to ensure evaluations were credible, and to then draw the broad lessons. The detailed consideration of evaluation plans for individual programmes and the subsequent evaluation reports has been delegated by EPIC to and Evaluation Methodology Group (EMG). This however is largely still failing to involve the wider range of interest groups, necessary to inform future policy making.

The requirement to draw lessons from the experiences of Other Government Departments (OGDs) is set out among other things in the H. M. Treasury 'Green Book'. In relation to the wider picture however, DTI officials tend to work in their own well established tradition, tending to ignore what goes on elsewhere.

There is a requirement to evaluate programme strategies in terms of their ability to meet departmental, policy objectives. Dr Lambert was able to propose some ways forward in resolving the evaluatory issues.

Moving towards a more centralised framework for evaluation would enable comparisons of programme performance across DTI, in terms of value for money or contribution towards departmental PSA objectives.

Knowledge management is seen as a potential way of overcoming this 'silo mentality'.

As a first step, evaluation staff in the separate units could be brought together into a single evaluation unit. An option is for the unit to be housed in FRM, to use the status of this directorate as DTI's ultimate controller of finance, to add clout to evaluation findings and recommendations.

The Departmental Strategy Group (DSG) are thinking along these lines, but no plans are available at the time of the interview.

The single evaluation unit could look across past schemes and draw out the best practice lessons. But in this process there is a need to look forward as well as the past. As part of Evaluation's role in informing policy, it is also necessary to research markets and industries to help inform the setting of policy objectives, and then how to meet those objectives.

General observations:

It is observed that the content of the evaluation sections of the Green Book tends to be about project rather than programme evaluation, and its value is therefore restricted. It is also observed that officials in DTI tend stay with their own established traditions, tending to ignore what goes on elsewhere.

Subsequent Dialogue:

In a subsequent exchange of E-mails (between 17 October 2000 and 19 October 2000) Dr Lambert subsequently added that "*on the point about looking at OGDs evaluations - it is rare for administrators here* (at DTI) *to look at DTI evaluations – one reason being that they are orientated towards the effects, possible future and scope for improvement of individual programmes. Lessons do not readily generalise, especially as folk tend to see their own schemes as sui generis, while evaluations also tend to seem to be about yesterday's solutions to yesterday's problems. Another reason is that they can be pretty boring (mea culpa on that one)*".

APPENDIX C

THE ROLE OF ADVISORY COUNCILS – ACOST

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C.1 Introduction

Experience gained by the author from his work in the development of programmes, coupled with discussions with fellow officials and an interview with Dr. John Leather [Interview 6] a member of the ACOST AMT Sub-group, has shown that a major influence on the development of policy has been the government's 'Advisory Councils'. Advisory Councils advise government in the development of its policy in areas which are of national and strategic importance. The Councils identify the issues relating to policy and report to government, making recommendations. ACOST, the subject of this review, was disbanded in 1993.

The author first became aware of the influence of the Councils on DTI policy when working on the development of the ROAME statement for the Manufacturing Planning and Implementation (MPI) programme (see appendix H). In developing the ROAME, the rationale statement was reinforced by referring to problems which had been identified by one of the Councils. Discussion with colleagues indicated that the Advisory Councils have affected DTI policy on many occasions. Consequently it is necessary to investigate the role of these Councils, to assess the nature and extent of their influence.

C.2 The Role of ACOST

Of the Advisory Councils, it is those having an industrial remit which most influenced DTI policy. Two councils have been the main sources of influence:

- The Advisory Council for Applied Research and Development (ACARD).
- Advisory Council On Science and Technology (ACOST).

Announced in a memorandum to the House of Lords Select Committee on Science and Technology, ACARD was established in 1976 to consider matters related to UK Manufacturing Industry. The formation of ACOST was announced by the government on 20 July 1987, and represented one of several steps taken to strengthen UK Research and Development in response the recommendations of the First Report of the House of Lords Select Committee on Science and Technology: 1987-88 Session. ACOST absorbed the work of ACARD and was given an extended set of terms of reference to cover all aspects of science and technology.

Study of the Advisory Councils has concentrated on the role of ACOST, which was the main influence during the period studied. (The operation of ACARD was similar to ACOST).

Information on the operation of ACOST was collected in the following ways:

- Study of the internal government information pack, summarising the aims, and operation of ACOST (ACOST, 1989, pp. 5-6). This details the Council structure and membership of the component committees,

- Interview of the Secretary of the ACOST Sub-Group on AMT [Interview 8],

- Discussion with officials regarding their experiences,

- Personal experience gained in drafting the government response (DTI, 1991c) to the ACOST report on Advanced Manufacturing Technology (ACOST, 1991),

- Examination of documents held on department files,

- Reading of reports published by HMSO of reviews conducted by ACARD (ACARD, 1983) and the ACOST report on AMT (ACOST, 1991).

Initial analysis of the data showed the fundamental role played by ACOST in policy development within DTI, and allowed a 'broad brush' picture to be painted describing the nature of influence of the Council. The main features are detailed in the following.

ACOST had no executive role. It was purely advisory, there to help develop policy. ACOST's remit was to identify and consider the national issues in science and technology, and give their advice as to how best these may be addressed by the Whitehall departments. Contained within their final reports, their advice was presented as recommendations directed to government departments. In taking the national view, ACOST dealt with those issues which transcend the individual responsibilities of government departments, and other bodies involved in science and technology. Thus ACOST normally confined its work to issues which might not be addressed by a single department alone.

ACOST reported to the Prime Minister and was owned by the Cabinet Office, which provided and housed the Secretariat. The Secretariat reported firstly to the Chief Scientific Adviser (CSA), who was responsible for providing advice on science and technology matters to the Prime Minister and the Cabinet. The CSA was the main link between ACOST and government, and played the central role in planning the work of the Council. ACOST's advice was based on studies of a subject which it might select by itself, or at the request of the Prime Minister. Reports were submitted to the Prime Minister, generally with a recommendation to publish, but sometimes on a confidential basis.

Membership of the Council comprised senior figures drawn from Academia and Industry, who possessed a breadth of expertise and experience within the assigned area of remit. The CSA together with the Chief Scientists/Scientific Advisers of the Whitehall departments (normally people at Grade 2 Level), also attended full meetings of the Council. Additionally, the Prime Minister periodically met ACOST. Much of ACOST's work was carried out in the Sub-Committees and small Working Groups which sit under the Council. The groups supported the work of the Council: its Sub-committees each studied specific topics falling within the more general terms of reference of the Council.

There were three Sub-Committees in total: the Annual Review, International Collaboration and the Emerging Technologies committees. It was the last which was the main focus of attention. Membership of the groups comprised partly of persons drawn from Council and partly of members co-opted because they could make special contributions to the subjects under review.

The councils operated on a restricted budget and were unable to undertake research themselves. The data collection method employed by a council or a working group was therefore to invite leading representatives to submit evidence, from bodies such as trade and research associations, learned societies, Academia, senior executives from companies and government departments. These bodies would have undertaken research in the area of interest, or alternatively by the nature of their work had a good understanding of strategic requirements (e.g. a university participating in a number of collaborative projects and leading edge developments). Evidence might be submitted orally or as written reports.

C.3 Setting the Work Agenda

The process of setting the work agenda comprised identifying and prioritising the issues. Collection of data to inform the process took place at various levels and in a number of different ways. Firstly there was a large element of 'self-setting' of the agenda by ACOST itself. From their informed positions, members of ACOST raised issues which they considered to be of concern. Secondly, the Chairman of ACOST hosted dinners for the Secretaries of State: these dinners were the forum for the exchange of views on the key issues. The Prime Minister has also been known to request particular items to be put on the agenda. For instance Mrs. Thatcher asked ACOST to investigate issues relating to the 'Environment'.

ACOST also maintained a dialogue with the Whitehall departments, with several levels of contact. At the middle management level (Grade 6 and 7 levels), staff from relevant departments sat on the working group panels as assessors. An example was the AMT sub-group formed under the Emerging Technologies Sub Committee to look at and report on the national AMT issues. DTI, having the lead in the AMT area, fielded an assessor on the panel [Interview 5]. As a member of the panel, DTI was able to advise ACOST about the identification of the issues, and about the drafting of the recommendations contained in the resultant Report on Advanced Manufacturing Technology (ACOST, 1991).

The work of ACOST also related to the Whitehall departments through their respective Departmental Advisory Bodies. For DTI, the Advisory Body was called the Innovation Advisory Board, which was a section within the former Research Technology and Planning Division (RTP). Investigations have not revealed any evidence that development of programmes was precipitated through this interface with the Council.

C.4 The Mechanisms of ACOST influence

ACOST appears to have worked through two main influences:

Final Reports: The content of the reports represented one of the sources of advice to the Prime Minister, and might be employed in Cabinet decisions relating to policy. Clearly, potential for ACOST to affect DTI policy by influencing Cabinet decisions existed, but the research undertaken has not identified any examples of scheme development being effected directly in this way. However, ACOST's ability to wield direct and profound influence over policy in the Whitehall departments was clearly evident.

ACOST had a high political status, because the Council was chaired by the Prime Minister and owned by the Cabinet Office. The high status required the government to respond formally to the recommendations in the final reports. Responsibility for drafting the 'official response' fell to the Whitehall departments that were the subject of the recommendations. Because ACOST's studies transcended the boundaries of activity of the individual departments, more than one department would normally be involved. The protocol employed was that the department seen as having the principal lead in the topic covered by a report, accepted responsibility for drafting the response on behalf of itself and the other Ministries targeted for action.

Officials in the lead department drafted the text of the official response, which was submitted to the Secretary of State for approval for publication. The text of the submission aimed to address the concerns of ACOST in terms of the initiatives already in place and those planned. It is the case of the planned initiatives which is of particular interest. It is important to note that by approving the draft response, the Secretary of State publicly committed his department to implementing the planned activities.

Working Papers: Leading up to the preparation of a final report, discussion documents and draft reports were widely circulated by ACOST within the relevant departments and elsewhere. These

papers stimulated discussion within the departments and hence influenced the formation of their thoughts.

Investigation of the interplay between ACOST and DTI has revealed two mechanisms of particular interest, which were brought into play in the development of new programmes. By having an assessor on the Emerging Technology's AMT panel, DTI was apprised of ACOST's views about what needed to be undertaken in the field of AMT [Interviews 5 and 6]. Using this knowledge, DTI could design and launch the MPI programme such as to address a number of ACOST's concerns ahead of the publication of the final report. Thus the department was placed in a strong position when drafting the government response to the report.

The second mechanism again arises from the department having an assessor on a working group. In the period 1989/1990 DTI became concerned about the lack of co-ordination between the AMT related activities supported in the UK. The department considered the solution to the problem to be the provision of a centrally administered, UK network to disseminate information about best practice in the application of AMT. DTI wished to undertake a feasibility study to consider the viability of its proposals, but needed to have the problem identified as a priority for DTI to address. Through the Assessor appointed from DTI, the department was able to raise awareness of the problem within the ACOST and suggest the introduction of the Network as a solution. The DTI input to the discussions resulted in ACOST formally recommending that the DTI should consider establishing an information network along the lines proposed.

As it was a formal recommendation, DTI was obliged to respond and drafted an Official Response proposing a feasibility study as a precursor for setting up a UK network meeting ACOST's concerns. The draft text was approved by the Secretary of State, so committing the department to consider the networking issues. By this sequence of events officials engineered the grant of a remit for something they wished to do.

Discussions with a sub group member [Interview 6] led the author to believe that ACOST was often used to help officials get issues placed higher on the political agenda. In this respect, ACOST is seen as having given departments an opportunity to do something which they would like to do, but for which they had no remit.

C.5 Summary

ACOST not only informed and influenced programme development, but was also used as a tool by government departments to help them secure approval for policy. The principal mechanisms are summarised below:

a) Exploitation of the position of an agency which, operating at the national level, was able through its research activities to identify the issues of national importance and make recommendations concerning their resolution. Operating at the national level facilitated the interrogation of a broad cross section of well informed opinion enabling the drafting of recommendations which were well balanced and hence credible.

b) The presentation of recommendations in formal reports to the policy makers within DTI, thereby informing the process of policy relating to programme development. The recommendations helped officials build programme rationale, by providing the evidence of the presence of failures within the market, together with the argument to support the proposed lines of corrective action.

c) The chairing of ACOST by the Prime Minister together with the committee being responsible to the Cabinet Office (the agency responsible for helping the government to develop its policies), motivated the department to take action as the Committee's recommendations were recognised as being the directive aims of government.

d) Having ACOST undertake its research at the next level up from that where ministries specifically operate, helped ensure that strategic issues were addressed. These issues might otherwise be missed, because they fell outside the remits of individual departments.

e) Issues to be examined were identified in the guise of setting an agenda which scoped the investigatory work to be undertaken.

f) The setting of the agenda involved the initial identification and prioritisation of potential issues:

- ACOST adopted a multi-sourcing approach in capturing data to inform the process of priority setting:

- as membership comprised prominent, well informed individuals representing a broad church of opinion in the community, ACOST was collectively able to flag potential problems;

- informal dinners were used to provide a forum in which important issues might be discussed with Secretaries of State;

- ACOST additionally received intelligence about national priorities from the Whitehall departments, through the lines of communication which existed between the CSA, and the officials at the Chief Scientist level within DTI, etc. The CSA is located in the Cabinet Office and was a member of the ACOST committee. The Chief Scientists hold senior positions within the departments (usually at Grade 2 level), and are hence able to take an overview of problems notified by staff within individual branches and sections.

- the Prime Minister is in a position representing the complete overview of national issues. His or her position brings him/her into contact with a wide variety of senior individuals. His or her chairmanship allowed him to raise and discuss relevant issues.

h) Credible recommendations were produced by ACOST because of the thorough investigation of the identified issues. This involved establishing the exact nature of the problems involved, and taking an informed opinion about the approaches which might be adopted in their resolution.

i) The mechanisms described in h) were enabled by accessing the data within agencies representing national sources of informed opinion. The principal contributors were:

- members of ACOST themselves;

- organisations representing a broad cross section of the AMT community;

- seconded members of individual departments acting in the role of assessors within sub committees who were thereby able to use their knowledge to help ACOST determine and prioritise problems.

j) Credibility in reporting was enhanced through the circulation of draft conclusions (working papers), to government departments and other interested parties, redrafting findings in the light of comments received.

k) Circulation of working papers provided DTI and other departments with early confirmation of the issues. Their circulation hence provided an important source of evidence, which might be drawn upon in the development of programme rationale statements.

l) ACOST provided a means by which departments were able to secure ministerial approval for policy which they wished to implement towards addressing market failures. The mechanisms involved were:

- use of the assessor role to place issues on ACOST's agenda and steer the development of associated recommendations;

- The requirement to respond to ACOST's recommendations in the form of an Official Government Response.

That the departmental responses were assigned the status of 'official' means that they were statements of government policy. As it is in turn the responsibility of the departments to initiate action to administer policy on behalf of ministers, the recommendations of an advisory council provided the mandate for officials to develop programmes of appropriate activities.

APPENDIX D

THE ENTERPRISE INITIATIVE

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D.1 Introduction

This appendix describes the Enterprise Initiative (EI) which featured a large promotional campaign aimed at improving access to DTI's services, by making firms more aware of what the department had to offer.

D.2 Description of the Enterprise Initiative

Chapter 1, section 1.1, introduced the Enterprise Initiative (EI). Announced in the DTI White Paper (HMSO, 1988, pp. 24, 41). EI was launched on 13 January 1988. The white paper explains the role of EI as bringing together the services operated by DTI for industry and commerce. Through EI the government was seen as providing a comprehensive package of 'self-help' for firms. Themes emphasised were promoting innovation through support for R&D, and helping firms become competitive through transferring best practice, and helping firms to use expert, private sector advice.

EI was a 'flagship activity', and acted as the primary influence in co-ordinating DTI's programmes. It is for this reason that it was studied in more detail as a case study. In itself, EI did not provide direct help to firms, rather it acted in the role of a co-ordinator, bringing together many of DTI's existing schemes and promoting them as a single 'product line'.

The Enterprise Initiative was dropped as the department's flagship in 1994.

D.3 Issue Identification

The author is able to provide some of the background leading up to the introduction of EI. Along with his colleagues he was informed that in 1987, Lord Young, then Secretary of State for Trade and Industry, sought to rationalise the 100 or so schemes he inherited on his appointment. He believed the sheer number and the absence of their co-ordination, were contributing to confusion and a general lack of awareness among SMEs about DTI's support programmes. He was reported by senior officials to have said that he felt DTI's services for firms were its 'best kept' secret! Lord Young asked officials to address the problem of confusion. The need for a co-ordinated approach to address the problems was reflected in the DTI White Paper.

EI hence provided a national focus for DTI's programmes, and generated synergy by structuring schemes behind a common goal; that is to promote 'enterprise' among firms. In this way access was seen as improved by removing some of the confusion.

Programmes brigaded together and operated under EI included the case study examples of the Research and Technology (R & T) Initiative, the Consultancy Initiatives (CI), Managing into the 90s (M90s), and the Manufacturing, Planning and Implementation (MPI) programmes (EI, 1989). EI also included activities to increase awareness of international standards, to help firms cope with the introduction of the Single European Market. In a discussion with Mr John Oakley, a PR10 in DTI and who had knowledge surrounding the development of EI, he informed the author that a separate ROAME was not prepared for the EI promotional campaign.

D.4 Implementation: Promotion of the Enterprise Initiative

The DTI White Paper refers to DTI's services to be strongly promoted. Concerned that the business community was largely unaware of the DTI services available, the DTI engaged an external marketing agency to develop and run a promotional campaign towards increasing participation in its schemes. The author observes the aim of promotion was to raise levels of awareness among firms of the schemes operating under EI. In this way one of the barriers to participation was removed, by helping businesses understand how DTI's programmes could help them.

An interview was held with Ms Paula Freedman who had responsibility as a Grade 7 in DTI's Enterprise Division for the promotion of EI [Interview 4]. Ms Freedman was able to provide useful information concerning the campaign. The need for a high profile campaign arose from the targets set in the DTI White Paper, for the numbers of SMEs to undertake consultancy projects under the Consultancy Initiatives. To ensure these targets were achieved, a high level of promotion was required. (The Consultancy Initiatives are discussed in appendix F).

A high profile was secured by heavy advertising in the national media, including television, and at regional and local levels through the provincial press. The advertising campaign made people aware of the existence of DTI programmes, and how they offered a service to help companies overcome problems. It was the largest promotional campaign to have been mounted by DTI to date, with a budget of around £10 Million a year.

To keep EI in the forefront of peoples' minds and to reinforce messages, the campaign was run substantially over the life of the initiative. Annual blocks of funding were agreed by the IPC and ministers. An external agency was appointed to design and mount the campaign.

The strategy adopted for the campaign was to first build awareness of EI, to develop interest in DTI's schemes. Advertising on national Television was the primary medium employed for this purpose, with the objective of obtaining a volume response. Advertisements were at first of 60 seconds duration which was subsequently reduced to 30 seconds and then finally to 10 seconds. Television advertising was backed by advertising in the national, regional, and technical 'Press'.

The advertising campaign was supported with the introduction of a set of promotional literature. The literature had a hierarchical structure, with the booklet *Introducing the Enterprise Initiative* (EI, 1989) serving as the 'top level' brochure. This provided an overview of the schemes operated by DTI to help business, and signposted the reader to lower level literature which described individual programmes in more detail. Signposting between schemes was achieved by cross-references between the EI promotional brochure and the literature of the individual schemes: this increased awareness of the full range of help available from the department.

The author was informed by colleagues of how the advertising campaign generated a high enquiry rate, which DTI was unable to service. Many of the responses generated were also reported by Ms Freedman to be 'rubbish'. The department surmounted these problems by letting a contract for the manning of an enquiry help line, and the distribution of introductory literature.

D.5 Monitoring: Assessment of Impact

The goal set for the advertising campaign was to achieve an awareness of 70% among the target audience of SMEs. In talking to the author, colleagues reported that typically only a few percent of firms are usually expected to be aware of DTI schemes. Market & Opinion Research International Limited (MORI) were commissioned to track and measure the impact of the campaign, producing tracking reports at six weekly intervals. Among factors measured were the levels of awareness of the

EI Booklet. Drip and burst techniques were employed in advertising, the levels of advertising increased on a regional basis, when falls in the response rates were detected.

MORI reported that around 52% of firms were aware of EI six months after advertising began (MORI, 1998). The figure indicates the success of the campaign, as demonstrated by the substantially higher level of awareness of EI, compared with that normally expected for other schemes. The author would note however, that most of DTI's programmes had not previously been the subject of a concerted advertising campaign.

Central to the EI advertising campaign was the use of a corporate logo, the now famous 'Whoosh Arrow. Use of the 'Arrow' taught officials of the value of corporate badging to promote a corporate identity, and the policy was continued with the introduction of the Business Links initiative. An unexpected benefit of the promotional campaign was the raising of DTI's status in the eyes of the general public. Colleagues reported to the author a much higher rate of external applicants for posts within DTI as a result of the campaign.

APPENDIX E

THE RESEARCH AND TECHNOLOGY INITIATIVE

APPENDIX E THE RESEARCH AND TECHNOLOGY INITIATIVE

E.1 Introduction

Chapter 2, section 2.5 discussed the move away in 1988 from near market R&D. Far less emphasis was also to be placed on single company funding with greater stress to be put on technology transfer. These changes in policy were set out in the DTI White Paper (HMSO, 1988, p. 3). The white paper refers to DTI's support for R&D to become part of the department's services to be provided under EI.

As discussed in chapter 2, section 2.5.3, the DTI White Paper provides the background to establishing the R & T Initiative. The white paper states that "*The overall aim of DTI's innovation policy is to encourage a net addition to innovation by industry without creating distortions in the economy*" (HMSO, 1988, p. 33).

The paper refers to innovation as being essential to sustain competitive edge (p. 33), and that successful businesses are those which innovate. The white paper continues by arguing that the ability and willingness of businesses to innovate had strengthened through an improved economic climate, but UK funded R&D remained a lower proportion of GDP than that experienced in other, industrial nations.

The DTI White Paper (HMSO, 1988, p. 33) then refers to a review by DTI of its role in encouraging innovation. Based on the findings of the review, three changes in policy towards the funding of R&D were proposed. Firstly greater emphasis was to be given in collaborative programmes on longer term research involving companies, simultaneous with the encouragement in these programmes of more collaboration between higher education institutions (HEIs) and firms. Secondly more stress was to be placed on promoting the many different aspects of technology transfer, and thirdly to end the SFI Scheme and other specialist activities aimed at promoting the take up of specific technologies, such as the Microelectronics Industry Support Programme.

Against the backdrop of the new policy, the white paper then highlighted the responsibility on firms to finance R&D and those circumstances under which it is appropriate for government to help. The Paper states:

"*Firms themselves are best able to assess their own markets and to balance the commercial risks and rewards of financing R&D and innovation. The Government should not take on the responsibilities which are primarily those of industry. The closer to the market place that innovation is taking place, the more fundamental this should be as a guiding principle of policy. In particular, firms have the best access to information about the prospects of R&D projects they alone undertake and are best placed to reap the benefits from them*".

But the Government recognise that reliance on the decisions of firms may produce a level of innovation and use of technology which fails to provide maximum benefits for the economy as a whole. The Government's view is that DTI's innovation policy should be focused primarily on the circumstances where research is necessary before commercial applications can be developed, or where the benefits of research are likely to be widespread, and on technology transfer. There may also be exceptional circumstances where technological uncertainties of research dissuade firms from projects which would have benefit to the whole economy",

(HMSO, 1988, p. 33).

The DTI White Paper identifies four principal areas of activity to be supported in collaborative research:

- LINK - current at the time of writing this thesis, LINK encourages companies to participate in joint research with HEIs. The *Innovation Budget Guidelines* inform that LINK is an 'across Whitehall' initiative, involving DTI and other government departments (DTI, 1992, p. ii).

- EUREKA - also current at the time of writing this thesis, the scheme focuses upon collaboration between firms and other organisations across national borders in Europe (DTI, 1992, p. ii),

- National collaborative research programmes - encourage longer-term industrially led collaborative projects between firms, in new, advanced technologies. In the *Innovation Budget Guidelines* these were referred to as Advanced Technology Programmes (ATPs), (DTI, 1992, p. iii, annex 6, p. VI – iii). ATP programmes were introduced in response to policy wishing to see support of National collaborative research programmes (HMSO, 1988, p. 35) which looked to encourage longer-term collaborative projects between firms, in new, advanced technologies. ATPs were theme based, and concerned with the development of strategic generic technologies, such as robotics and Information Technology (IT), which had potential application across a range of sectors [Interview 11].

- General Industrial Collaborative Projects (GICPs) - encouragement of collaborative research through a number of types of project (DTI, 1992, p. iii, annex 8, p. VIII - i). GICP projects were aimed at motivating firms to collaborate in industrially orientated research. They tended to be focused on a specific sector, such as the High Speed Machining Programme which brought together users of 'high technology' cutting machinery and the machine tool industry [Interview 11].

Following shortly after the publication of the white paper, the DTI's Research and Technology (R & T) Initiative was launched in 1988 as an integral part of EI (EI, 1989). The R & T Initiative housed the above schemes, which also contained elements to promote technology transfer and innovation more generally. The *Innovation Budget Guidelines* were revised and a new version of the Guidelines issued (DTI, 1988). Revisions reflected the policy changes introduced in the DTI White Paper, and the brigading together of the R & T schemes under the R & T Initiative.

For the purposes of this research it was decided to concentrate on those programme areas where DTI has sole responsibility. It was thought that significant, additional research would be required to investigate fully the LINK and Eureka activities, and the author wished to keep the research within acceptable bounds.

Although not listed in the early version of the Innovation Guidelines (DTI, 1988), SMART continued to be funded (DTI, 1991b, p. 1). In 1988, this represented a principal 'exception to the rule' of funding policy, being the only significant programme at the time still offering single company support. In 1991 a new initiative, Support for Products Under Research (SPUR) was introduced (DTI, 1994b, p. 1). SPUR also offered single company funding, but unlike SMART, which was aimed at the small firm, SPUR targeted the medium size of company (DTI, 1994b, pp. 9, 13).

Inspection of the 1992 issue of the *Innovation Budget Guidelines* (DTI, 1992, p. iii) shows both SMART and SPUR to have been brought together into the R & T Initiative. Reading the guidance also reveals increased stress on achieving innovation and technology transfer in project work. The following text examines in more detail the features of some of the programme activities supported under the R & T Initiative.

For this case study example, investigations have focused on GICP, SMART, and SPUR, on the basis that these schemes are broadly respected within DTI for their performance.

E.2 GICP and Club Projects

The DTI White Paper (HMSO, 1988) in relation to GICP projects, talks about such work as "*encouraging collaboration through a variety of projects*" (p. 35). The paper continues that some of these projects service the requirements of fragmented industries, where normally small firms do not have the resources for advanced technological projects (pp. 35-36). Research Associations were seen as examples of organisations which could pool their resources to meet the needs of these SMEs.

The 1992 edition of the Innovation Budget Guidelines (DTI, 1992, p. iii, annex 8, p. VIII – i) develops the theme. The guidelines refer to support for R&D undertaken at a 'host site', which is referred to as a centre of excellence, with the host orchestrating research on behalf of specific groups of industrial organisations. Guidance (DTI, 1992, p. iii) states that normally hosts will be Research and Technology Organisations (RTOs). Examples of an RTO are the Production Engineering Research Association (PERA) and RAPRA, the Rubber And Plastics Research Association. The guidelines refer to RTO led projects as 'Club Projects'.

The evaluation report *Evaluation Of DTI Funded Research Projects At Research And Technology Organisations* (DTI, 1996c), (the report comprises 45 pages and was prepared by DTI's Assessment Unit) provides further information on DTI support for RTO led R&D. In introducing the subject, the report refers to the GICP programme being announced in 1988 with the aim of encouraging collaborative research projects that would be of particular benefit to SMEs (p. i, paragraph 1.2). A total of 913 projects were funded with grant payments totalling £127 Million.

The RTO Report (DTI, 1996c, p. 12) draws a distinction between two categories of projects supported under GICP. These are co-operative and collaborative projects respectively, although the author observes that these titles are sometimes used interchangeably. Co-operative projects are those where membership funds are used to provide the industry contribution, usually around 50% of the project costs. Co-operative projects are thus undertaken on behalf of the whole membership of an RTO. Collaborative projects are those where the industry contribution is provided by individual companies, with funding provided with cash or in kind (by both members and non-members).

Co-operative projects were often found to be speculative, being well away from the market, and to benefit the members at large and were broadly based. Collaborative projects fell into two types. The first, and the majority, were those projects where the RTO undertook the research work itself, with participant firms providing funding in kind such as staff time, raw materials, and samples. Generally companies involved in these projects had an interest in exploiting the results, but who were either unable to fund the research component of project work, or support the facilities to do so. A small proportion of the projects were found to be truly collaborative, with industrial partners taking an active part in research.

The RTO evaluation report (DTI, 1996c, pp. 2-4, 7) provides a useful summary on the history of funding RTOs. The report refers to government support for RTOs prior to 1970, focusing on maintaining an RTO as a viable research facility for a particular sector. Support was in the form of block grants which were not assigned to specific activities. Subsequently policy changed to that of funding particular programmes of work at RTOs. From 1988 onwards programme ROAME statements were prepared for each RTO programme to be supported.

The 1988 evaluation report (AU, 1988), (the report contains 42 pages), provides further background (pp. 1-3) to DTI's support to the RTOs and other organisations, such as the department's Industrial Research Establishments, prior to 1988. R&D clubs operating in a range of research areas were formed by the research organisations, with R&D carried out on behalf of club members. Dissemination of technical information and the provision of technical services were also important functions for the clubs (AU, 1988, pp. 2-3, 7-14). The evaluation report discusses how DTI (and other departments) had provided financial assistance for 'clubs' run by the research organisations. The RTOs' traditional role

of providing a wide range of general co-operative research and other services on behalf of their membership as a whole, is highlighted. However, attention is drawn to many RTOs having undertaken group sponsored projects for sections of their membership, which may be classified as club projects. In concluding, the evaluation report confirms the rationale for club support and recommends that funding continue (AU,1988, pp. iv, 41). The author observes that the role of the RTOs closely aligns with the post 1988 function described above, and therefore suggests that the good experience of the RTO model played an important part in developing GICP.

The introduction of support for club projects being before the introduction of the requirement to prepare programme ROAME statements, and hence no such cases were likely to have been prepared for each project supported. No reference is made in the 1996 evaluation (DTI, 1996c) to a previous ROAME statement for GICP, and the author suggests that a ROAME was not prepared. ROAMEs were, however, produced for the individual projects supported under GICP, (see section E.2.1.1 below).

E.2.1 Issue Identification: Rationale

The RTO Evaluation Report (DTI, 1996c, p. 7) discusses the rationale for GICP. Several market failures are described. Many firms, both large and small, were wary of sharing research information with others. Firms often have insufficient resources or lack the necessary expertise to undertake research work. Many were described as simply unwilling or unable to commit funds to R&D work, because of the long time horizons associated with pre-competitive research. Costs are significant in setting up R&D projects and ensuring that work will be attractive to other participants.

Other market failures, which represented problems for RTOs and firms alike, were reported as being set out in the programme rationale. They were as follows:

- "*the inability to shoulder technological and financial risks,*
- *the lack of information on technical or financial potential,*
- *disregard for the wider benefits*",

(DTI, 1996c, p. 9).

The author observes that the market failures identified above reflect the eligibility conditions for funding which are set out in the Innovation Budget Guidelines
(DTI, 1992, pp. 16-18, 1996a, pp. 102-104, 1999a, pp. 91-94), as discussed in chapter 5, sub-section 5.2.4.1 of this thesis.

E.2.1.1 Identification of Market Failures

In GICP it is the author's experience that it is the RTOs which flag problems to officials. Inspection of evaluation reports supports this view. The RTO report refers to the preparation of ROAMEs "*accompanying RTO proposals*" (DTI, 1996c, p. 7). The evaluation report looking at DTI support for collaborative R&D at RTOs in the metals processing industry is more specific, stating "*ROAME statements were written by officials in the Department based on information supplied by the RTOs*" (AU, 1992, p. 3); (the report comprises 24 pages and was prepared by DTI's Assessment Unit).

E.2.2 Objectives

The RTO Evaluation Report (DTI, 1996c, p. 8) gives the programme objectives as being to promote co-operative and collaborative, pre-competitive research involving industrial SMEs, and encourage technology transfer into that sector, particularly into small firms.

E.2.3 Delivery Strategy

The principal mechanism deployed in the programme was to use the resources available to RTOs, to help promote R&D in these firms (DTI, 1996c, pp. 9-10, 16, 24). The 1992 edition of the Innovation Budget Guidelines (DTI, 1992), shows how the RTOs were grant funded to lead and undertake project work (p. iii, annex 8, p. VII – i to ii).

The RTO Report (DTI, 1996c) argues the case for majoring on RTOs as host organisations. Compared with alternative organisations, RTO membership normally comprises a high proportion of SMEs (p. 8), the focus of government policy (HMSO, 1988, p. 25, 35-36), and hence RTOs tend to be more aware of SME needs. Through their day to day activities RTOs have built up substantial knowledge of their specialist sectors, and are thus able to guide R&D such that it meets industrial requirements (p. 9). RTOs have also been found more willing to share information than large companies. Through their membership services, RTOs are normally better able to communicate the information they wish to share (pp. 2, 9-10). Therefore RTOs provided DTI with access to the target companies through a well established and well informed infrastructure.

E.2.4 Programme Implementation

Programme administration was the responsibility of officials employed in DTI, which included project appraisal and monitoring. The RTO evaluation report refers to the administration of the projects being the responsibility of project officers in five divisions within DTI. The report shows that administrative duties included the appraisal of applications and objectives to check their conformity with the aims set out in the ROAME statements, and project monitoring. Some RTOs were reported as holding the view that in setting strict objectives, they were prevented from fully exploiting areas of potential research, that were not envisaged at the beginning of projects. That the DTI project officers had been flexible in their approach, in those cases where problems were significant, was highlighted (DTI, 1996c, pp. 20-21).

E.2.5 Evaluation

The RTO Report (DTI, 1996c) records the evaluation of GICP projects managed by Research and Technology Organisations (RTOs). The aim of the evaluation was to identify the benefits accruing to the RTOs and industrial participants from their GICP projects, and the achievement of programme and project objectives. Evaluation also looked at the effectiveness of monitoring and project management, additionality, the levels of innovation and technology transfer and finally, the wider benefits.

The evaluation report (DTI, 1996c, pp. 4-7) in setting out the evaluation strategy, states that between 1992 and 1995, 300 GICP projects were scheduled for completion. The sample for evaluation was generated by using the criteria of projects receiving a grant of greater than £50,000, and due for completion between December 1992 and December 1994. This gave a sample size of 89 projects covering 17 RTOs. The sample size was considered large and therefore statistically significant, allowing conclusions relating the total universe of projects to be drawn with reasonable credibility. Progress reports held on DTI project files were also inspected.

Face to face interviews were conducted with senior management and project managers at 15 out of the total 17 RTOs. A structured questionnaire was used in each interview. The questionnaire aimed

to identify the benefits which had accrued to both the RTOs and industry members as a result of participating in the supported projects. Interviews aimed also to assess the achievement of programme and project objectives, and determine the effectiveness of project monitoring and management, and measure the levels of additionality, innovation, technology transfer, and the wider benefits experienced.

E.3 The SMART Scheme

The DTI Innovation Budget Guidelines (DTI, 1992, p. iii) describe the Small Firms Merit Award for Research and Technology (SMART) scheme as an open competition, focusing on single companies. The 1991 Evaluation Report of the SMART Scheme (DTI, 1991b); (the report contains 39 pages and was drafted by DTI's Assessment Unit) usefully provides the background to the introduction of SMART (pp. 1-2). The Report informs that the Scheme was launched in 1986 to stimulate innovative projects in start-ups and small firms. The idea for the scheme arose out of officials looking at the Small Business Innovation Research (SBIR) programme in the USA, a point which the author is able to confirm from information he picked up in the course of his duties at DTI. However SMART was seen in differing from SBIR in several respects, particularly in respect of the latter involving 11 US government departments and agencies whilst SMART was a purely DTI initiative.

SMART is described as a 'competition' consisting of two competitive stages, which were referred to as Stage I and Stage II in the report. The term 'competition' was adopted as the scheme aimed to attract more applications than grants awarded. Entry into Stage II is limited to the winners of the first stage. The scheme was launched with a pilot competition involving 20 Stage I awards, with companies employing less than 200 staff being eligible for funding. In 1988 the scheme was expanded with a total of 140 Stage I awards. The original target had been 100, but so many quality proposals had been received that the number was increased to the higher figure. Costs were reported as being around £9 Million (DTI, 1991b, pp. 1-2).

The 1991 Evaluation Report shows a further three year programme costing £29 Million was approved for the years 1989-91, with a target of 150 Stage I awards set for each year. To maximise the value of the scheme, the decision was taken to restrict eligibility for support to SMEs employing 49 or less staff. In 1990 officials felt the number of high quality applications had again increased, and the number of Stage I awards was raised from 150 to 180. Funding of Stage I projects was at a level of 75% of project costs up to a level of £37,500, and for Stage II work 50% support was provided to a maximum of £50,000. These percentages and figures were maintained throughout the period covered by the Report (DTI, 1991b, pp. 1-2). Approximately 50% of Stage I winners received Stage II funding.

The later 1994 version of the SMART evaluation (DTI, 1994a) (this report comprises 29 pages and again prepared by the department's Assessment Unit) provides further details pertaining to the development, operation, and the performance history of the Scheme. A further round of funding was agreed for the three year period 1992-94. Funding levels continued at 75% and 50% for Stages I and II respectively, but the limits were increased to a maximum grant of £45,000 for Stage I awards, £60,000 for Stage II. The target level of Stage I awards, set at 180 in 1990, was maintained for the 1992-1994 period (DTI, 1994a). By the end of 1994, SMART had attracted 7356 applications, and had made awards totalling £64.5 Million (pp. 1-2).

E.3.1 Issue Identification: Rationale

The 1991 SMART evaluation report (DTI, 1991b, p. 3) refers to the earlier SMART competitions being launched at a time of rapidly changing DTI policy (HMSO, 1988). The evaluation report comments that the development of rationale for SMART was subjected to several different

approaches during the 1988-89 period, but that the various versions do not vary greatly. The rationale for SMART was observed to be built round addressing the following market failures:

"*a)* *Small firms have particular difficulty raising finance because the sums involved, while too large to raise against the security of personal assets, are smaller than those of interest to venture capital organisations. The latter rarely consider anything under about £200k.*

b) *The capital market shows too little interest in high technology projects which are costly to assess, and of which they have little understanding.*

c) *The market is excessively averse to the high risks attached to small, often start-up, firms putting forward innovative, back-from-the-market projects. However such firms and projects, when successful, are particularly profitable and beneficial to the economy.*

d) *The market under-values the benefits likely to accrue to potential customers for SMART stimulated products. There will also be benefits from stimulation to both competitors and sub-contractors*",

(DTI, 1991b, p. 3)

The 1991 ROAME statement highlights small firms facing problems in raising finance for innovative technological projects, (ROAME, 1991b, section B, paragraph 4), and for evidence of these problems references the findings of the evaluation report. The ROAME continues by repeating the evaluation findings (a) to (d) above.

The report (DTI, 1991b) refers to the above rationale resting on the belief that small, high technology firms face disproportionate difficulty in raising finance. Rationale for SMART was seen as predicating that the scheme would be able to avoid the problem for some firms, and contribute removing it for all, by helping the providers of venture capital to appreciate the potential and be more willing to advance funds for small, high technology firms, (DTI, 1991b, p. 3).

The 1994 SMART evaluation report (DTI, 1994a) takes up the discussion. It proposes that evaluatory work confirmed the credibility of the elements (a), (b), and (c) of the above rationale, (element (d) was not commented upon) but that "*with hindsight for rationale for changing the climate for investment was probably unrealistic*", (DTI, 1994a, p. 3). The report argues that for SMART to have changed the financial climate, the scheme would have had to demonstrate that financiers were missing good investment opportunities and therefore it would pay them to change their attitudes to all firms, not just the winners. This it did not do and the evaluation report concludes that there was no evidence of SMART successes having significantly changed the attitude of financiers towards investing in small, high technology firms (pp. 3-4, 16-17).

The author wanted to establish the approaches adopted in establishing SMART's original rationale. However he met with difficulty. The evaluation report (DTI, 1994a, pp. 1-2) refers to SMART having been launched during 1986. This, the author is able to state, was at a time prior to the introduction of ROAME statements, and he was therefore unable to inspect a ROAME to extract the required information. Secondly, with the passage of time, it was not possible to locate colleagues associated with the introduction of the scheme.

E.3.2 Issue Identification: Conceiving the Idea for SMART

The author was however fortunate enough to be pointed by Mr. John Hobday (Director in DTI's Small Business Service) who had previous responsibility for SMART, in the direction of Mr. Roy Evans. Evans, a PR9 and a member of the team currently responsible for the delivery of SMART, was able to report that while not involved at the beginning of SMART, he had worked on the

scheme at a sufficiently early stage to be working with those officials involved with its launch. He had learnt of the circumstances surrounding the introduction of SMART from them.

Evans reported that officials had visited the United States in the mid 1980s, to look at US policy on helping small firms. They were particularly taken by the operation of the Small Business Innovation Research (SBIR) programme. At this time the department was operating SFI, which tended to focus on the medium sized firms and the larger companies. SBIR in contrast, was aimed at smaller firms. The value of helping the smaller firms in terms of job and wealth creation had also been noted at the time, and in turn the benefits accruing from SBIR which was aimed at this sector. On this basis SMART was introduced to fill the perceived gap in DTI's programme provision.

E.3.3 Aims and Objectives

The following aims and objectives were set out for SMART in the ROAME statement:-

Aims:

- "*To contribute to a climate which encourages investment in highly innovative technology by individuals, firms and financial institutions*".
- "*To encourage and facilitate the formation of viable and durable, science and technology-based businesses*".
- "*To stimulate small firms to develop and market new science and technology-based products*".

(ROAME, 1991b, section C, paragraph 9)

Objectives:

- "*To stimulate at least 25% more worthwhile ideas per year meriting a Stage I award than there are awards available*".
- "*By the end of each Stage II, to have caused at least 10% of Stage I winners in that competition to be viable small firms established or registered after winning*".
- "*To stimulate at least one-third of Stage I winners to market a SMART derived- product within three years of getting the award*".
- "*To achieve ratings for 'value for money' and 'innovation' at least equal to those achieved in the 1990 evaluation and on the same basis*".

(ROAME, 1991b, section C, paragraph 9).

The ROAME (paragraph 5) highlighted the findings of the evaluation report (DTI, 1991b, pp. 11-13) which had indicated the previous good, value for money realised in SMART, by the attributable profits exceeding the amount of DTI assistance, (see also appendix K, section K.3.2.2).

E.3.4 Delivery Mechanisms

Pivotal to the operation of SMART was the use of grant funding to encourage firms to undertake R&D, the grants helping to offset factors such as risk and lack of finance, thereby helping to reduce the identified market failures (ROAME, 1991b, section A, paragraphs 1-3).

N.B. Indication that the 1991 ROAME was submitted to the IPC is provided in a minute dated 3 December 1991 from DTI to the Territorial SMART managers, which refers to proposals having been discussed by the IPC. A further minute dated 2 December 1991, from the head of the Research and Technology Planning Directorate 3, requests approval from the Secretary of State (SoS), for a further programme of SMART competitions.

E.3.5 Programme Implementation

Study of the evaluation report (DTI, 1991b, pp. 2-3, 13-22, 1994a, pp. 2, 14-15) shows that Head Quarters DTI has overall responsibility for the management of the SMART scheme and deals with policy matters. The former DTI Regional Offices (ROs), and currently the Government Offices (GOs), together with the former Scottish and Welsh Offices, and the Department of Economic Development in Northern Ireland, are responsible for the administration of the scheme in their respective regions. The administration task involved overseeing the Stage I competitions inviting proposals and appointing winners, awarding and monitoring of grants - project progress and financial monitoring for both Stages I and II. The 1991 evaluation report records most firms having reported that they had received at least two monitoring visits during their Stage I projects, from officials in the Regional Offices (1991b, p. 22).

Initially the allocation of awards to each region was made on the basis of population, but the need to respond to the needs of policy on regional assistance was also taken into account (DTI, 1994a, p. 14). However latterly DTI awarded 20% of the grants based on quality factors.

Mr. John Papworth (PR 10) of DTI's SME and Technology (SMET) Directorate, who has responsibility for administering SMART, was able to explain the process involved. DTI wished to monitor the quality of assessment work carried out by the ROs. Each 'region' was asked to forward to departmental officials, two sets of case papers for successful applications, together with all those of applicants put on the reserved list. Both sets of case papers are checked to ensure that assessment has been fair.

In particular, the reserve list cases would be checked to see if ROs had applied the acceptance criteria too tightly. Where DTI officials found instances of applications which in their opinion should have been awarded a grant, the relevant RO would be told to reconsider its list of reserve proposals. Simultaneously the RO would be allocated an additional 20% of funds to cover additional projects.

The report (DTI, 1994a, pp. 14-15) refers to regional staff calling upon officials in the various divisions and agencies within DTI, Research Establishments and other departments, to obtain specialist advice relating to technologies and markets in assessing proposals. However reference is made to staff in the regions "*finding it increasingly difficult to identify individuals within DTI to provide technical expertise in particular technology areas*", (DTI, 1994a, p. 14). This observation is in line with those of others such as Dunleavy (1995, pp. 61-63), who highlighted the loss of access to expertise through successive reorganisations within government, (see chapter 3, section 3.2.3 of this thesis).

The evaluation report (DTI, 1994a, p. 14) refers to calls for proposals being announced in January of each year, which are closed in April. Awards are then made in the following September. The evaluators observe that inevitably delays in making awards can typically be up to one year, from the time of an applicant submitting a proposal. Interviews with scheme participants revealed that 65% of respondents had experienced little or no difficulty with the delay, but that a substantial minority (35%) were presented with some serious problems.

E.3.6 Evaluation Method

The evaluation report (DTI, 1994a, pp. 2-3) describes the evaluation method. The review was undertaken by the DTI Research and Technology Policy Assessment Unit, with the review strategy based on postal questionnaires sent to Stage I and II winners. A total of 412 firms were contacted as a random sample out of a population of 830. The sample comprised of three groups of firms; Stage I (1988 to 1992) and II winners, those involved in an earlier evaluation, and unsuccessful applicants. A response rate of 66% was achieved.

In order to test the validity of the survey sample, that is that the information contained in the postal responses constituted a representative sample, the ROs were asked to provide information on projects which had displayed outstanding success. Face to face interviews were also conducted with Regional Office staff, and four with financiers. In addition the Review took into account the views expressed by people at presentations at financial fora, and at Regional Office SMART meetings.

E.4 Support for Products Under Research Scheme

The Support for Products Under Research (SPUR) scheme was introduced in 1991 with three years of funding. The budget was £32 Million (DTI, 1994b, p. 1). An evaluation of the scheme was conducted in 1994 and the evaluation report (DTI, 1994b), (the Assessment Unit's SPUR report contains 17 pages) provides useful background to its operation.

The overriding objective of SPUR was to encourage established SMEs to undertake more R&D. Like SMART, SPUR provided single company support to firms, but was targeted at funding projects which were the subject of significant technological advance. The selection criteria also required proposals to demonstrate a clear route to the market, to enhance the probability of exploitation. Grant funding was provided at the fixed level of 30% of the total, eligible project costs to a maximum of £150,000. Projects were required to be of between 6 months and 3 years in duration. Unusually a minimum limit was set for the total projects costs. The limit was £50,000. This minimum limit helped differentiate SPUR from the SMART scheme, the intention with the former to target somewhat larger projects. Another aspect differentiating SPUR from SMART was the emphasis on established SMEs, rather than start-ups.

E.4.1 Issue Identification: Rationale

The SPUR evaluation report (DTI, 1994b, pp. 3-4) details the three principal elements of the programme rationale. They were:

Innovation - the particular importance of the SME Sector's role in innovation was cited, which materially depends on them undertaking R&D.

Finance - SMEs face greater difficulty in obtaining finance to fund R&D and the problems which they experience are larger than those experienced by larger firms. In consequence promising work is not undertaken, delayed, or is restricted in scale. Thus it was concluded that if left to market forces alone, R&D undertaken in SMEs would be less than optimum.

Risk - several components of risk were identified. SMEs it was considered, lack the range and scale of business activities which would enable losses on one project or business area to be offset by profits generated elsewhere. Financiers may be deterred from investing in R&D projects because they lack the necessary information and expertise to satisfactorily evaluate the risks involved. Participation in collaborative projects was seen as difficult for SMEs, because of their sensitivity to failure, and their inhibition to share knowledge. The higher costs associated with

collaborative R&D "*bear heavily upon them*" (DTI, 1994b, p. 4). In summarising these market failures, the view was taken that left to the decision processes of SMEs, R&D and in turn innovation would be inadequate to the detriment of the economy as a whole.

E.4.1.1 Identifying Market Failure

The author again approached Mr. John Papworth who also had responsibility latterly for the running of SPUR in DTI's SME and Technology (SMET) Directorate. Mr. Papworth was asked what lay behind the rationale for the programme. The author was informed that the reason for introducing SPUR was to 'plug the gap' left by the withdrawal of the former SFI scheme. Mr. Papworth continued by explaining that SMART catered for the smaller SME, but not the medium sized company.

A discussion with Mr. Peter Munday of DTI's Management Best Practice Directorate (MBP) provided some further insights. The launch of SPUR was in reaction to a marked drop in project applications, following the decision to substantially withdraw from single company funding in 1988 (HMSO, 1988, pp. 35-37). Following the decision officials experienced a significant fall in the numbers of project applications. Despite the offer of funding, many SMEs were found reluctant to join collaborative projects. Discussion with firms revealed that the inducement of grant funding was insufficient to overcome their suspicion of potential partners. This market problem demonstrated the need for single company support, to encourage SMEs to embark on R&D projects, and was cited as key to the rationale for introducing SPUR. Mr. Papworth concurred.

The SPUR evaluation report (DTI, 1994b) supports the preceding observations. It makes reference to the changes in R&D support which were introduced in the late 1980s (HMSO, 1988, pp. 35-37). These it argued, "*had an unforeseen and disproportionate effect on SMEs*", (DTI, 1994b, p. 4). Reference is made to the previous Support for Innovation (SFI) scheme, which had shown that significant benefits arose from supporting smaller firms. Additionality was considered more easily identifiable and higher with the SME projects, than in those supporting larger companies.

E.4.2 Objectives

As introduced above, the overall objective of SPUR was to encourage more small firms to undertake greater levels of R&D to develop new products and processes to benefit the UK economy (DTI, 1994b, pp. 9-14). Six specific objectives were quoted for SPUR. These are discussed below along what was achieved in practice.

"***Objective 1:*** *to support at least 60 projects in the first full year of the scheme and 150 projects annually by the third year which lead to significant advance*", (DTI, 1994b, p. 9).

111 projects were supported in the first year, which was well in excess of the target figure, with 136 in year two. Sixty eight projects had been supported up to August 1993, and the evaluation report concluded that the target of 150 projects funded by year three end, was likely to have been achieved.

"***Objective 2:*** *to stimulate at least £25 M per year additional investment in R&D, which could not otherwise have occurred, by SMEs by the third year*", (DTI, 1994b, p. 10).

The evaluators reported that it was too early in the life of SPUR to assess performance against this objective. But at the time of the evaluation it was found that 63% of firms had increased their spend and R&D capability, as a result of SPUR funding.

"*Objective 3: at least 80 new products to be marketed successfully by firms (grant holders and other firms) within two years of the end of the initial three year scheme*", (DTI, 1994b, p. 10).

The object was likely to be met. Of the 199 firms which had responded to the questionnaire, 94 stated their intention to have their products on the market by the end of 1993. A further 72 expected their developments to be on the market by the end of the following year. Of the 22 firms visited, 14 already were marketing their products with six planning to launch theirs within a year. The evaluators commented on the effect which SPUR was having on speeding the release of products and processes into the market.

"*Objective 4: to generate additional profits in the companies supported, which when aggregated over the four years following the end of the project, amount to three times the grant*", (DTI, 1994b, p. 10).

The assessment team suggested that it was too early to measure this objective. Companies, it was observed, tend not to identify profits generated from specific products. Nonetheless applicants were asked to provide estimates of increased turnover created as a result of sales from the SPUR supported products, and the evaluators in turn estimated that profits were approximately twice that of the grant values. On this basis progress was concluded to be reasonable.

"*Objective 5: 70% of projects should achieve most or all of their specified technical objectives*", (DTI 1994b, p. 12).

This objective was likely to be achieved. It was found that objectives were changed during the life of the projects, often resulting in a better product. Only 22 of the 24 completed projects were visited, but all of these firms had achieved 75% of the objectives set. It was found that objectives were changed during the life of the projects, often resulting in a better product. That it is probable that the other firms would achieve a similar performance is indicated in the "Conclusions" of the SPUR report, where it is stated that SPUR would be likely to meet its specific objectives.

"*Objective 6: to streamline administrative procedures so that at least 75% of offers are made within 4 months of the date of the initial application*", (DTI, 1994b, p. 12).

Overall this objective was also met, and a tightening of the target from four to three months was recommended.

In helping to ensure that the SPUR scheme was in practice addressing the needs of the larger SMEs, and thus differentiating from SMART, the evaluation report (DTI, 1994b, p. 13) records that an additional objective was introduced by officials that 50% of successful applicants be SMEs employing between 50 and 500 people. The postal responses suggested the meeting of this objective, with 53% of firms employing more than 50 staff.

E.4.3 Delivery Mechanisms

Similarly to the SMART scheme grant funding was pivotal to encouraging firms by reducing inhibiting factors, thus enabling them to commit to undertaking R&D and helping to negate the perceived market failures, (ROAME, 1990b, paragraph 1).

N.B. Evidence of the ROAME (1990b) being submitted to the IPC for approval is provided by the document being referenced as an IPC paper, that is IPC (90) 31.

E.4.4 Programme Implementation

In England SPUR was delivered through DTI's Regional Offices whose function was to appraise applications against the eligibility criteria and award and pay grants on behalf of the department. In Scotland and Wales the Scottish Office Industry Department and the Welsh Office Industry departments did not have devolved authority to award grants, with appraisal papers passed with their recommendations to DTI HQ for authorisation (DTI, 1994b, p. 1). A note giving a brief history of SMART, was handed to the author by a colleague (see also section E.4.5 below). The note recorded that during 1995, SMART Stage 2 was subsumed into SPUR. The author notes that the decision to integrate SPUR with SMART was in reaction to the recommendation of the SPUR evaluation (DTI, 1994b, p. 17), which suggested officials needed to consider the relationship between the two initiatives. (The 1994 SMART evaluation report (DTI, 1994a, p. 17), in its recommendations, suggested merging Stage II of SMART with SPUR).

E.4.5 Evaluation Method

The SPUR evaluation report (DTI, 1994b, pp. 2-3) sets out the evaluation strategy which was adopted. At 29 April 1993, 497 applications had been received of which 292 had been approved, 142 failed, and 63 still being processed. Twenty four had been completed. Because only a relatively small number of completed projects questionnaires were sent to the 232 cases which had received approval by 31 December 1992. The evaluation report argues that these projects had been underway sufficiently long for meaningful conclusions to be drawn (DTI, 1994b, p. 3).

A similar questionnaire was posted to the 115 firms whose applications had been failed by the 31 December date. Again it was thought sufficient time would have elapsed for these firms to have made decisions relating to the future for their original proposals, and thus able to answer the evaluators' questions. The results of the postal questionnaires was regarded as very good, the response rate for successful and unsuccessful applicants being 86% and 62% respectively.

Twenty two of the 24 completed projects were 'visited' and face to face interviews conducted with company personnel. Programme managers in the ROs were also visited to obtain information relating to the administration of the scheme, to capture their experiences and gather their views on performance.

During the evaluation the evaluators examined the levels of R&D funding and examples of where SPUR had stimulated additional R&D activity. The evaluation also looked at SMEs' funding arrangements to support R&D, and whether they had experienced difficulties in raising the required funds.

Appendix K discusses good (and bad) practice in the developing and running of programmes. Section K.2 looks at some general examples including experiences of operating R & T programmes. Section K.3 focuses on the case study examples; sub-section K.3.2.1 analyses good practice in GICP programmes, K.3.2.2 good practice in running SMART, and sub-section K.3.2.3 those in SPUR. An undated paper (based on the contents drafted around October 2000), summarising the history of SMART, which was passed to the author by a colleague (Mr Roy Evans), states that SMART Stage 2 was subsumed into SPUR, and the programme renamed SPUR Plus. In 1997, the new Smart scheme was introduced which incorporated the earlier SMART and SPUR initiatives.

APPENDIX F

THE CONSULTANCY INITIATIVES

APPENDIX F THE CONSULTANCY INITIATIVES

F.1 Introduction

Introduced in 1988 the Consultancy Initiatives (CI) provided support to SMEs for consultancy projects. CI programme replaced, but was based on, several previous advisory schemes covering technology and business practice (Ernst & Young, 1990, p. 1). The overriding aim of CI was to improve the quality of management in small firms, and the support provided represented a major component of the government's strategy to improve the competitiveness of businesses. CI comprised of six discrete 'initiatives' which were collectively referred to as 'The Initiatives' by officials and those directly connected with the administration of the set of schemes.

Six individual initiatives were supported under CI, these being the Business Planning Initiative (BP), Design Initiative (DES), Financial and Information Systems Initiative (FIS), Manufacturing Systems Initiative (MFR), Marketing Initiative (MKT), and the Quality Initiative (QUA). Under CI independent firms or groups employing less than 500 people were eligible for grants for hiring consultants in specified, target areas of management (EI, 1989, pp. 4-17).

Chapter 1, section 1.1 introduced CI, which was announced in the DTI White Paper (HMSO, 1988, pp. 24-27). The white paper in referring to the immanent launch of the Enterprise Initiative, set out the governments intention to include a set of initiatives in EI to support private sector consultancy projects, across a broad range of management functions. The white paper stated that £50 Million was to be made available during the financial year 1988/1989 to support these business development initiatives. A target of supporting 1,000 projects per month was set for the financial year. The programme was closed on 15 September 1994 with the award of the last grant.

F.2 Conceive and Test Validity of the Idea

The author observed from conversations with colleagues, that the idea for the Consultancy Initiatives grew from two stimuli. Firstly, evaluation of previous advisory schemes had shown that deficiencies in SME management were continuing (see section F.3 below), suggesting that intervention should continue along similar lines. Secondly as discussed in appendix D, section D.3, the Secretary of State Lord Young wanted DTI's programmes to be better co-ordinated in their delivery. This provided the impetus to bring the previously separate consultancy schemes together under one banner, the Consultancy Initiatives (CI). As activities to be included in CI were based on existing schemes, it was unnecessary to confirm the validity of an idea.

F.3 Development of Rationale

The DTI White Paper (HMSO, 1988, pp. 24-25) provides the background to the rationale for introducing CI. The white paper refers to high quality management being essential to the competitiveness of businesses, who alone create a prosperous economy. Immediate action was seen as being needed to improve management skills. The white paper (HMSO, 1988) acknowledged that management skills can be improved by training, and referred to the wide range of facilities available in organisations such as business schools and colleges.

However it was pointed out that many SMEs face particular difficulty in using these facilities. Small firms normally cannot afford to let managers spend time away from the work place, and a

wide range of management skills is required to reside in a small number of individuals. SMEs it was argued, do not have the resources to undertake proper analysis and planned development of their businesses. The use of external, professional expertise to supplement existing management resources was seen as an immediate way of helping to overcome the problem (HMSO, 1988).

The programme ROAME statement for CI (ROAME, 1988b) takes up the theme. It refers firstly to the DTI White Paper (HMSO, 1988) placing great importance on the need for effective business development (ROAME, 1988b, paragraph 1.1). The ROAME suggests the following market failures being present, based on previous evaluations:

"*a) The levels of management competence in many firms is low compared to overseas competitors;*

b) levels of management education and training are low; and

c) systems to take strategic decisions within firms are often non-existent",

(DTI, 1988b, paragraphs 2.1-2.3).

The author proposes that the above elements of market imperfection may be summarised as staff in SMEs, lacking the necessary management skills to manage business operations effectively, such that they are competitive in the market place, (see chapter 5, sub-section 5.2.4.2).

The CI ROAME statement continued by noting that in addition SMEs tend not to hire in external expertise to help make good their lack of management expertise. The ROAME also highlighted that while expert services existed in the market place, market imperfections existed which prevented their use by small firms. Firstly there was a general lack of information about the availability of the services. Secondly SMEs perceived consultants as being expensive and their services of limited relevance to them. In short, they represented poor value for money in the eyes of many small companies.

The CI ROAME (DTI, 1988b, paragraphs 2.1-2.3) describes how the market failures were identified. In the case of CI this was, as mentioned above, substantially one of demonstrating the continuation of previously identified problems. The ROAME refers to the above propositions being derived from the results of a previous evaluation of earlier advisory schemes operated by DTI. In particular operation of the previous Business Improvement Services (BIS), Business and Technical Advisory Services (BTAS), the Advanced Manufacturing Technology (AMT) and Micro-electronics Awareness Programme (MAP) were cited. The evaluations had demonstrated that few firms were aware of the net gain which could be obtained through the use of consultants, but those who had experienced their use had found consultants help to have been valuable. A good degree of additionality had also been demonstrated, and the schemes had exhibited considerable benefits to both applicant firms and the economy.

An interview was conducted by the author with Mr. Philip Sowden [Interview 8] of PERA International, who was responsible for managing the previous BTAS scheme, and under CI the Manufacturing and Quality initiatives. He was able to provide some interesting insights surrounding the development of CI. Mr. Sowden referred to Lord Young's observations that DTI's schemes had been its 'best kept secret'! He then described the background leading to the design of CI. Formation of CI was substantially a process of absorbing the previous advisory schemes. These schemes had been 'topic' orientated, focusing on a particular, manufacturing business discipline. They had been developed at a time when officials were concerned with mounting a response to the success of Japanese industry, which was seen as arising from their use of Advanced Manufacturing Technology (AMT) such as robotics.

As time progressed, the need to take account of the management issues in applying new technologies had been realised. Too many instances had been reported by officials, when visiting companies, of seeing equipment purchased and commissioned with previous DTI support lying idle. This Sowden argued, was because no consideration had been given as to how individual implementations should be interfaced with other manufacturing systems. For example, machinery

interfacing with a robot arm has to work to closer tolerances than when working with a human operator. People position work where they see the machine requires it. Robots, not normally fitted with visionary sensors at the time, had to rely on work being placed within a well defined area.

Management needed to take into account the operating characteristics of all equipment when setting up an FMS facility. As a result, addressing the management issues within supported consultancy projects was introduced with CI.

From discussion with colleagues in the normal course of his duties, the author is able to confirm Mr. Sowden's observations. The author would go further, observing that officials were also concerned with firms improving their management skills across the entirety of business functions (HMSO, 1988, p. 24), and taking a more holistic, strategic view of their operations. Furthermore the DTI White Paper (HMSO, 1988) emphasised the then government's desire to help the broad spectrum of SMEs, rather than focusing solely on those operating in the manufacturing sectors. It is of interest to note that in the 'Quality Initiative', a significant proportion of firms supported lay outside manufacturing, (approximately 30% of certifications were in the service sector), (PERA, 1992, pp. 17-18).

CI was based on the earlier advisory schemes and its elements were targeted at improving management in similar business areas, but developed to reflect the requirement for firms to take account of the wider management issues [Interview 8]. Rationale for the continued targeting of these areas was based on evaluation of the earlier advisory schemes, which had demonstrated persistence of problems and the value of their amelioration. The CI ROAME refers to CI being designed to focus the attention of SMEs on specific areas of management, which it argued contribute to competitiveness and growth.

Inspection of the CI ROAME shows the areas targeted were 'Marketing', 'Design', 'Quality', 'Management (of manufacturing systems)', 'Business Planning', and the introduction of 'Financial and Information Systems', (ROAME, 1988b, paragraph 2.7. Reading of the ROAME also reveals the shift in emphasis towards encouraging firms to become more strategic in managing their businesses. For example under 'Marketing' the CI ROAME refers to the strategic nature of this topic over and above its singular components, 'Design' as being strategically important to market success, and 'Business Planning' as providing a framework in which marketing objectives can be set.

F.4 Delivery Strategy

The CI ROAME (DTI, 1988b) quotes the delivery strategy for CI as:

"*To raise the level of management performance in key functions in SMEs by subsidising the greater use of outside consultant services*",

(DTI, 1988b, paragraph 4.1).

Officials argued that the continued market failure of firms being suspicious of the value of consultants, meant that SMEs would probably only embark on consultancy projects under CI if they received cash grants, (paragraphs 1.1-1.2, 2.1-5.1). The CI ROAME (DTI, 1988b, paragraph 2.3) referred to the evaluations also showing that the previous schemes had provided evidence of the mechanism of subsidising consultancy, to be effective in influencing firms attitudes towards the use of consultants. The large majority of applicants had indicated their intentions to use specialised, outside help again, at the full economic rate, that is, without grant funding. Officials therefore concluded that the mechanism of providing subsidised consultancy was an effective strategy for reducing the identified market failures. Subsidised consultancy was therefore used to encourage firms to commit to projects for change.

The previous advisory schemes had demonstrated sufficient additionality to justify continued funding at a level of 50% of the consultancy fees (DTI, 1988b, paragraph 2.3, EI, 1989, p. 4).

However the CI ROAME records how feedback from Regional Directors (senior civil servants employed in DTI's then Regional Offices), together with the experience of operating the earlier schemes, had indicated that firms in the nationally aided areas typically made less use of consultancy services, (paragraph 2.4). A higher level of support of two thirds was therefore argued as being justified. The ROAME refers to agreement having been reached with the European Commission (EC) to finance the additional grant spend from out of the EC's European Regional Development Fund (ERDF).

The CI ROAME described how the market failure of there being insufficient information available on the services provided by the sources of help, would be addressed (see chapter 5, sub-section 5.2.4.1). The ROAME described the aim of the delivery strategy as being also to "*encourage the spread of best practice by increasing the awareness among non-assisted firms of the cost effectiveness of consultancy services by encouraging a demonstration effect through emulation of those who have successfully improved their management strategy*" (DTI, 1988b, paragraph 4.2). The ROAME went on to say how publicity would form an integral part of CI delivery, which is discussed further in section F.9 below.

The CI ROAME refers to the evaluations of the previous advisory schemes as recommending that ways be found to increase the penetration of consultancy into the SME base, to secure a permanent change in attitudes towards the use of outside help. The strategy adopted in CI was to meet this goal through use of the 'demonstrator effect'. The intention was to create a sufficiently large number of firms who had experienced the benefits of using consultants, such that through their contact with managers in other businesses generally, these companies on witnessing 'success' would be encouraged to hire consultants themselves, at the full market rate. In employing the demonstrator effect, officials were exploiting the natural desire of people to emulate their peers.

Experience drawn from operating the previous advisory schemes had shown the need for better definition of projects to be undertaken, prior to their start (DTI, 1988b, paragraph 2.4). In response, the CI ROAME (DTI, 1988b, paragraph 5.2) specified the introduction of 'Business Reviews', undertaken by 'Enterprise Counsellors' to scope project work (SQW, 1992, pp. 2-3). The business reviews and the role of the 'Enterprise Counsellors' is discussed later under 'Programme Implementation', in section F.8.

F.5 Setting Objectives

The CI ROAME (DTI, 1988b, paragraphs 6.1-6.12) describes the setting of CI's objectives. The ROAME (paragraph 6.1) refers to the requirement to meet the DTI White Paper's objectives of completing 1,000 assisted consultancies per month during the financial year 1988/89, rising to around 1,500 in 1990/91 (HMSO, 1988, p. 25). The ROAME compared these more stringent figures with the target set for the preceding advisory schemes, of 350 per month. A total of 45,000 consultancies were to be completed by March 1991. By setting these targets the ROAME explained that it was intended to achieve a market penetration rate for CI of about 3% of the eligible firms. This target was set in response to recommendations of the earlier advisory scheme evaluations, which had recommended a target figure be set as the first step in achieving the demonstrator effect. The estimate of 1.2 Million as the total number of eligible firms was derived from the VAT Register at December 1986 (CSO, 1986).

Targets were also set for the number of applications and the business reviews, by working back from the target numbers of completed projects. Experience of running the previous advisory schemes had shown there to be attrition at each stage of the project approval process. Based on previous experience targets of 1,250 and 1,875 business reviews per month were set for the numbers of business reviews for 1989/90 and 1990/91 respectively, with the number of applications to be between two and three times these figures.

The fact that firms complete their consultancy projects does not prove their value. Value stems from the benefits perceived by the recipients of grant funding. In CI officials sought to measure value by asking the Enterprise Counsellors to capture the firm's perceptions of the value of their projects. In the light of operating the previous advisory schemes officials set targets for customer satisfaction as follows:

"*(a) more than 75% of users will rate the schemes as representing value for money;*

(b) more than 65% of users will or plan to implement the recommendations arising from their consultancy;

(c) more than 40% of users citing additionality will intend to use external advice in the future at full market rates",

(DTI, 1988b, paragraph 6.4).

The obvious objective of any scheme must be to reduce the market failures which it is designed to address. Targets are set such as to render the net effect on market failure visible. Inspection of these targets shows that they were set such that if met, a reasonable reduction of problems could be seen to have been achieved. (b) relates to the number of firms implementing their consultants' recommendations by way of indicating improvement in management systems. (c) measures the proportion of companies which would be prepared to hire consultants at the market rate, as an indicator of changed attitudes to their use. That the 'Initiatives' had achieved value for money was in part assessed by (b) which looks for most firms perceiving their consultancy projects to have been of value.

F.6 Programme Monitoring

The CI ROAME DTI (1988b, paragraph 5.2) and the companion document setting out the monitoring strategy (ROAME, 1988c) set out the arrangements for programme monitoring. The ROAME (ROAME, 1988c) stated that the monitoring strategy would be implemented substantially through the scheme's administrative procedures, (paragraphs 3.1-9.0). The details are given below.

The ROAME describes the objectives of 'Monitoring' to include measuring progress of CI against targets, to check the effectiveness of budget management, to provide information on programme efficiency, and directly and indirectly through 'Evaluation', to inform the process of policy formation. In the case of 'Evaluation', the CI ROAME informs that the monitoring strategy will provide an input to the task by:

"*(a) providing data on firms receiving business reviews and consultancy;*

(b) offering bases for survey sampling;

(c) the analysis of business review questionnaires and of business review reports;

(d) providing data on Enterprise Counsellor's, consultants', and firms' expectations of the benefits of consultancy projects;

(e) qualitative reporting on business reviews and consultancy projects;

(f) tracking research on increasing awareness among firms of the importance of management functions and the benefits of consultancy",

(DTI, 1988c, paragraph 9.0).

In a conversation with the author, Sowden confirmed that quarterly progress meetings were held with DTI officials. During these meetings topics such as project through-put, quality in terms of firms' reactions to their projects, and financial, including programme spend and forecasting, were discussed. Sowden also confirmed that progress meetings were similarly held with the other scheme contractors, and that the contractors were brought together every six months to discuss best practice. Over and above making use of existing administrative procedures to collect data, 'Monitoring' also employed external contractors to undertake activities such as market research (SQW, 1992, p. 6).

F.7 ROAME Approval

The CI ROAME was submitted to and approved by the Individual Programmes Committee (IPC), as indicated by the document being identified as an IPC paper, IPC (88) 69. The author observes that approval was assured because the planned initiatives would fulfill the policies of the DTI White Paper, with its emphasis on the need for more effective business development. The approval path also took in ministers, HM Treasury and the European Commission, as confirmed by a colleague, Mr John Oakley.

F.8 Programme Implementation

The CI ROAME and the fourth (and final) evaluation report on CI (SQW, 1992) (the Segal Quince Wicksteed report contains 92 pages) sets out the administrative arrangements for running the CI programme, (pp. 2-4). The programme was operated by the Enterprise Initiative Division (EI Division) of DTI, and administered through the Enterprise Units located in DTI's regional and satellite offices, (ROAME, 1988b, paragraph 5.3). For each of the six initiatives, day-to-day management was undertaken by a scheme contractor who appraised funding applications and managed the grants, (SQW, 1992, p. 3). Discussion with colleagues showed that the scheme contractors were appointed on the basis that they had run the previous advisory schemes effectively. Competitive tendering was not employed.

Assistance was available to firms operating in most business sectors including the service industries. A few sectors such as agriculture were excluded as these were supported by other government departments. Under CI, independent firms, or groups of companies who employed less than 500 people were normally eligible for assistance. SMEs could apply for funding under any of the initiatives. In the early phases of the programme companies were eligible to receive up to two grants, selected from one or any two of the initiatives. From April 1991 onwards eligibility was reduced to one grant per applicant (SQW, 1992, pp. 2-4). The CI ROAME records how the previous evaluation of the earlier advisory schemes had also recommended greater flexibility in the length of projects. Officials decided on a strategy of allowing applicants to have support for consultancy projects of duration between 5 and 15 days.

CI was delivered in three stages (DTI, 1988b, paragraph 5.2), (SQW, 1992, pp. 2-3). The purpose of each stage is now discussed, based on inspection of the CI ROAME statement (DTI, 1988b) and the final programme evaluation report (SQW, 1992).

Stage 1, Business Reviews - Companies sent their applications for assistance to dedicated Enterprise Units in the regional DTI offices, where they were vetted to ensure that basic eligibility criteria were met. The Enterprise Units then arranged for an Enterprise Counsellor to visit the applicant and undertake a strategic business review. The Enterprise Counsellor's were experienced business people, recruited from commerce and retained by DTI. The author was informed by colleagues that many individuals had experience of running their own businesses, or had held senior positions within companies.

For the business reviews the counsellor spent up to two days with the firm at no cost to the applicant. The business reviews were introduced in response to the perceived need to better define project work (see section F.4 above). In conjunction with the company, the Enterprise Counsellors prepared a report which:

- Recommended whether the company was likely to benefit from a consultancy, and if so, which initiative was the most appropriate, and what subject matter should be covered. The final choice of initiative was left to the applicant, but discussed with the Enterprise Counsellors in the light of the business review. The mechanism of using Enterprise Counsellors had a further advantage. Colleagues reported to the author that the Enterprise Counsellors often undertook the first step in helping SMEs, by identifying actions which firms could take immediately to improve their businesses.

- Assessed the company's ability to pay their share of the estimated project costs.

- Made recommendations for participation in other schemes within EI - (signposting).

Stage 2, Selecting a Consultancy - The scheme contractors who were seen as independent agencies in the selection process, matching the needs of firms consultancy projects to suitable consultants. To support client-consultancy matching the scheme contractors maintained lists of consultancies, deemed as being qualified to undertake work within CI. The management role of the scheme contractors was also to ensure that proper terms of reference were set for consultancy work, to negotiate consultancy fees, to monitor the quality of project work, and ensure that projects were completed on time.

Sowden [Interview 8] was particularly helpful in providing detailed insights into the day to day administration of CI. The process began with the business review reports being sent to the applicant, the local Enterprise Unit and the scheme contractor managing the initiative recommended. The local Enterprise Unit approved the grant towards the cost of a consultancy, and forwarded details of the Enterprise Counsellor's recommendations to the scheme contractor.

Sowden explained that the scheme contractors maintained a database of the details of consultants who had proved their professional fitness to undertake work within the scheme. Each consultancy organisation requesting listing filled in an application form, detailing resident skills, the length of time the organisation had been trading, (a minimum of two years), and four client references. The minimum period of two years for trading could be reduced to one year, if the head of the consultancy had worked as a senior partner in a previous position for a minimum of five years. Scheme contractors also requested project reports on work carried out for clients, and interviewed senior partners to substantiate the quality of their work and assess their capabilities.

Following the receipt of a business review, the scheme contractor then telephoned the SME about its project. If a firm had a particular consultancy in mind, the scheme contractor would check the database to see whether it was listed. If not, or if the applicant had no consultancy in mind, the name of three listed organisations were put forward from which the firm chose a consultancy. Fee rates, agreed with each consultancy and held on the database, were passed with consultancy details to the applicants. The scheme contractor sought to provide a consultancy with experience appropriate to the proposed project, and geographically near to the applicant. Although firms were responsible for selecting their consultants, scheme contractors unofficially provided guidance for the few firms who needed help.

After an SME advised the scheme contractor of their choice, the contractor asked the consultancy to draft a proposal based on the Enterprise Counsellor's visit report. The proposal echoed back the recommendations of the counsellor (so checking that the consultant understands what is required), which was followed by a description of the work to be carried out. The scheme contractor vetted the drafts, recommending modifications as necessary. The final version of the project proposal was agreed with the applicant who sent a letter of authorisation to the scheme contractor.

Following authorisation, the scheme contractor would raise an order with the consultancy for DTI's share of the costs, (the grant). The contract was between the scheme contractor and the consultancy organisation. Separately the applicant would raise a contract with the consultant for his share of the consultancy fees.

On completing the project the consultants prepared a report, copies of which were forwarded to the client firm and scheme contractor (SQW, 1992, p. 4). The scheme contractor checked that the project's terms of reference were met and the work undertaken represented good value. The scheme contractor also asked the applicant if its consultancy had been satisfactorily completed, and recorded the performance on the database. In this way the performance of each consultancy was tracked, so that those giving poor service could be de-listed. The tracking mechanism was also used to build up specialism profiles of the listed consultants.

Sowden was again helpful in highlighting the advantages seen as arising out of these contractual arrangements. The scheme contractor had a controlling influence over the consultancies. The potential grant monies which a consultancy could receive was large, but at the discretion of the scheme contractor. Thus good performers could be rewarded, while bad organisations could be brought into line by withholding monies where SMEs were dissatisfied, or cut out completely for consistently bad performance!

The final evaluation report (SQW, 1992, p. 4) shows how the copies of the consultants reports were also forwarded to the Enterprise Units for checking. Payment of DTI's share of the project costs was triggered by both the scheme contractor and the Enterprise Unit being satisfied with the outcome of consultancy work. The firms were independently responsible for paying their share.

Stage 3, Post Completion Visits - Following completion of project work, it was arranged for the enterprise counsellor to then make a post-completion visit. This final visit aimed to add value to the consultancy, by discussing with the firm their plans for implementing the recommendations contained in their report, and assessing the likely impact on the business. The visits also provided an additional opportunity to monitor a consultant's performance, and contribute to assessing that of CI as a whole, by obtaining the company's perception of the value of its consultancy exercise (DTI, 1988b, paragraph 5.2, ROAME, 1988c, paragraph 6), (SQW, 1992, p. 4).

The Enterprise Initiative introductory booklet (DTI, 1989, pp. 10-20), shows that a number of different types of organisation were appointed as scheme contractors. As already indicated, PERA were responsible for operating the Manufacturing Initiative. PERA were also awarded responsibility to administer the Quality Initiative, but in collaboration with Salford University Business Services Limited who were assigned responsibility for running the initiative in the North West of England. The Charted Institute of Marketing administered the Marketing Initiative, 3i Enterprise Support Limited the Business Planning and Financial Information components, and the Design Council the Design Initiative.

F.9 Promote Programme

The CI ROAME had referred to the previous evaluation of the earlier advisory schemes, as recommending that specific steps should be taken to secure permanent change in the attitudes of SME managers towards using external sources of help. It was proposed that a target penetration rate of firms be specified, which if achieved would create a sufficient number of SMEs which would act as a critical mass to motivate others to hire consultants at market rates.

Appendix D, section D.4, discussed the promotion of EI, and as part of this activity CI also. By promoting CI, firms' awareness of consultancy services was also increased. The CI programme ROAME statement (DTI, 1988b, paragraphs 5.4-5.5) provides more detail on the promotion of CI. Described as an integral part of the scheme, the campaign acted as the mechanism to overcome the market failure of insufficient information being available to SMEs, on the availability of help and the value of employing these sources of aid. Thus the campaign acted as the initial step in raising

the quality of management in firms. An underlying objective of adopting this mechanism was to also stimulate demand for consultancy, based on firms paying the full (unsubsidised) price for their consultancies.

The CI ROAME also pointed to another way in which CI was promoted. It highlighted the ability of firms to receive grants being limited to two consultancy projects as a key promotional feature. Limiting the number of grants maintained pressure on the marketing agency to bring forward new firms who normally would not have sought external help. In so doing the campaign would also serve to improve the overall additionality of CI. During a separate discussion with Sowden, he reported that the consultants themselves helped to promote CI. In their normal day to day contact with firms they would identify SMEs who would benefit from a consultancy project, and advise them of the assistance provided under CI. In this way potential projects were identified, a process that was referred to a 'seeding'.

Under CI an information booklet containing details of each of the component initiatives and how people could apply for funding, was produced (EI, 1989). The booklet was circulated to firms requesting details of the scheme. In operating CI, officials found that listed consultants would themselves promote the 'Initiatives', motivated by the sales opportunities created by the advertising campaign (SQW, 1992, annex A, paragraph 11).

F.10 Close Programme

Inspection of papers held on file shows that the Consultancy Initiatives were due to be closed on 31 March 1994, but on 9 December 1993 the President had announced that a further 10,000 applications would be accepted under the scheme. This quota had been met by September 1994 and the last application was received on 15 September 1994. Inspection of the 'files' shows that closure was announced through a 'press release' which advised that the role of CI was now covered by the Consultancy Brokerage Service (CBS), which was operated through the Business Links.

Colleagues informed the author that formal notice of the closure of CI was given through a planted, Written Parliamentary Question (see also chapter 7, section 7.8) immediately prior to the announcement of a further 10,000 projects being funded. The additional number of applications were announced as a result of the arrangements to replace CI with CBS being delayed.

F.11 Evaluation Strategy

Evaluation of the CI programme was undertaken by Segal Quince Wicksteed (SQW). In their final report of CI (SQW, 1992, pp. 8-13) which covers the operation of the intervention from its launch, SQW state the objectives of evaluation as being to:

- assess how well CI has met its objectives;
- provide information allowing value for money to be assessed;
- indicate where changes in the delivery of CI may be necessary.

In the case of the last, SQW recorded that the overall delivery approach had remained substantially unchanged.

The evaluation report SQW (1992, pp. 8-12) described the methodologies employed and their rationale. Evaluation was based on surveys conducted on face to face interviews with what are referred to as two panels (samples) of assisted firms. Each sample comprised firms who had completed their consultancy projects.

The first panel involved early applicants, who were initially interviewed in late 1988 and early 1989. The aim of conducting this first panel was to provide early feedback on any problems with the performance and administration of the scheme, so that corrective action could be taken quickly. For each initiative a sample of 35 'high assistance firms' and 35 'low assistance companies' were identified at random. The figure of 35 was regarded to be sufficient to accommodate any subsequent drop out of firms required for the second interview. The size of the total sample was 420 cases.

The second panel, which comprised firms who applied approximately one year later, allowed the possible effects of bias in the initial panel to be corrected. It was felt that the first sample might have been untypical. Early users of the scheme may have included the more dynamic firms, or those who already had consultancy projects in mind and would have gone ahead with these irrespective of grant funding. Such cases would represent very low or even zero additionality.

For both panels, a sample of firms were interviewed shortly after completing their projects, followed by a second interview of essentially the same sample, between one or two years later. The first interview assessed the immediate impact of the programme. Recognising that many participating firms might not have implemented, or have not yet decided to implement, the recommendations of their consultancies at this stage, the second interview was conducted to assess the longer term impact of CI, in terms of the actions eventually taken as a result of the scheme.

The findings of evaluation are discussed in appendix K, which discusses the good practice lessons which can be drawn from the programmes researched as part of this thesis. Section K.2 looks at some general examples, with section K.3.3 focusing on the operation of the Consultancy Initiatives.

APPENDIX G

THE MANAGING IN THE 90S PROGRAMME

APPENDIX G THE MANAGING IN THE 90S PROGRAMME

G.1 Introduction

Managing into the '90s (M90s) was an awareness programme aimed at improving the performance of companies by encouraging them to adopt best practice in managing their businesses. Best practice was promoted via mechanisms such as seminars, presentations, videos, and written material. After first making firms aware of 'the need', the programme's second objective was to encourage companies to commit to projects for lasting change. For M90s best practice was interpreted as adopting a co-ordinated approach to company management, with a management strategy developed to allow the company to respond effectively to the demands set by the market drivers.

M90s thus differed fundamentally from previous awareness programmes, where individual business topics had been treated substantially in isolation. Earlier schemes also tended to restrict activities to showing firms 'why' they should adopt best practice, without showing them 'how' they could embark on projects for change. M90s went further by showing firms how to improve their competitiveness.

Inspection of the programme ROAME statements (ROAME, 1988a, paragraph 8, 1991a, paragraph 12) show that M90s was targeted mainly, but not exclusively, at manufacturing SMEs (DTI, 1995, p. 9). It was a phased programme with each phase intended to cover a period of approximately 3 years. The first phase, entitled Managing into the 90s, was launched in early 1989. The second phase started in April 1992 under the modified title Managing in the 90s. Expenditure of Phase 1 was projected to be £3.3M a year, with expenditure in the first year of Phase 2 estimated to be between £3.0M and £3.2M.

Evidence for describing the processes involved in M90s were gathered through conversations with colleagues, including Dr. Draper (Grade 6) who had overall responsibility for M90s and who was the author's line manager, plus information gathered in contract meetings, file documents and interviews.

G.2 Issue Identification: Phase 1

G.2.1 Conception and Validation of the Idea: Phase 1

Before the launch of M90s in 1988, the department operated several awareness activities covering topics such as manufacturing and quality. These schemes were operated autonomously by the DTI divisions responsible. One of these schemes was the Towards Integration (TI) programme, which aimed to raise firms' awareness of the need to integrate computer based systems such Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM). Shortly after the publication of the DTI White Paper (HMSO, 1988) officials sought ministers' approval to extend funding for the scheme [Interview 5]. Approval was not forthcoming. To extend the TI activity in isolation was contrary to government policy as set out in the white paper, which had stated the aim to co-ordinate DTI's services to business. The Secretary of State therefore rejected officials' request.

The Secretary of State's rejection prompted the bringing together of DTI's awareness activities, under a single umbrella programme. That programme was M90s, which served to integrate the previously separate activities.

After the rejection of the TI proposals, the Heads of the divisions running the existing awareness activities met to examine the viability of bringing them together as a cohesive set of initiatives. The meeting found the idea practical and formed the M90s Steering Group to oversee the development and operation of the new programme. Membership of the Committee comprised of representatives at Grade 5 or 6 levels drawn from each participating division that was responsible for awareness activities. The DTI North East Regional Office also provided a member to represent the interests of all the departmental 'Regional Offices'. The committee was responsible for the development, implementation and review of all M90s activities.

The make-up of the M90s committee ensured individual divisional interests were represented, and facilitated access to a wide range of the department's corporate expertise in running awareness programmes. When planning activities, officials would therefore be able to draw on wide set of experience.

G.2.2 Development of Rationale: Phase 1

Rejection of proposals for extending the old Towards Integration programme had caused delay, and with the programme about to end, M90s planning had therefore to be undertaken in haste. Pressures now existed to obtain approval quickly, in order to maintain continuity of the previous activities. As a result, a significant proportion of M90s development took place after the programme was launched [Interview 5]. Hence the development of Phase 1 of the programme did not follow the usual sequence described in chapter 6, section 6.3 of this thesis.

The case for introducing the first phase was set out in the programme ROAME statement (ROAME, 1988a, paragraphs 1-7). The ROAME began arguing the rationale by referring to there being substantial evidence which indicated the importance for firms in achieving competitive advantage, of factors such as design, quality, manufacturing, management, good purchasing policies, and for these to be managed in conjunction with each other as part of an integrated, corporate strategy. The ROAME then drew attention to there being still too few firms who recognised the importance of these facts, and then acted upon them.

Several examples of the nature of problems were quoted. The M90s ROAME suggested that too much emphasis was placed on technology in isolation, to the exclusion of the substantial benefits which might be realised from changes in the organisation of manufacture and its connection with other business systems. In the area of purchasing, the ROAME identifies firms as adopting simply a 'cheapest is best' policy to ordering. Quality is often implemented piecemeal, with firms doing the minimum necessary to obtain accreditation from those they supply, and not moving on to continuous quality improvement. In summary, few firms were performing well in all functional areas, and most were failing to manage them as part of an overall, corporate strategy.

It was then argued that previous awareness campaigns operated by DTI had helped increase recognition of the importance of the above factors, but they had tended to focus on raising awareness of the issues; that is the reason 'why' action is required, rather than 'how' to take corrective action. The department had not helped itself by operating its awareness schemes in isolation from each other. Thus, the ROAME (ROAME, 1988a, paragraph 4) continued, market imperfections remained.

G.2.2.1 Identifying Market Failure

The M90s Phase 1 ROAME (ROAME, 1988a, paragraphs 5-6) indicates how the evidence of market failure was derived. Reference is made to statements in the DTI White Paper which related evidence of individual firms failing to develop their management competencies, which is not helped by the lack of information. (The author notes that these references were also cited in the CI

ROAME statement (ROAME, 1988b). It was stated that market forces alone were not expected to bring about the necessary improvement in the quality of management in SMEs. This observation, coupled with the paper's reference to DTI's role in spreading awareness, was seen as justifying intervention with M90s.

The ROAME (ROAME, 1988a) also recognised that whilst the DTI White Paper had highlighted the importance of Design, Quality, and Manufacturing Systems to competitiveness, no mention had been made regarding the purchasing function (paragraph 6). However the ROAME related how, following the publication of the white paper in January 1988, the Secretary of State had agreed with officials that 'Purchasing' was of sufficient importance to warrant inclusion in M90s.

From his experience of involvement with M90s activities and discussions with colleagues, (see also Interview 5), the author is able to provide insights into how other sources of evidence were employed in developing the programme's rationale. These sources contributed to the weight of evidence referred to in the Phase 1 ROAME.

Evidence that firms were not using good practice was collected from several sources. The Advisory Council for Applied Research and Development (ACARD) report *New Opportunities in Manufacturing: The Management of Technology* (ACARD, 1983, pp. 46-48) found that few companies had applied AMT to their manufacturing process as an integral part of business strategy, and that the level of training was low (ROAME, 1988a, paragraph 5).

ACARD's findings were reinforced by the results of an internal study conducted by officials. The author located a copy of the interim report of the study on a DTI file. Inspection of the report *Manufacturing Management, Interim Report* (MAM, 1988), showed it to have revealed a low level of systems integration. Over a period of about two months, officials interviewed manufacturing companies selected from the Towards Integration Demonstration Firms Scheme, software suppliers, research associations, and consultants. Few firms were found to have implemented production methodologies such as Just-in-Time (JIT), and the majority remained inward-looking, and relied on their reputation to secure new business.

In cases where business operations were being integrated firms were beginning to gain significant benefits. Experience of operating the MAP advisory scheme had shown that firms emphasised the technology, without integrating their business operations. Few firms understood the need to take the wider view or knew how to plan strategically.

Awareness within DTI that a lack of knowledge in firms was constraining better management grew as a result of officials listening to questions asked in the seminars run under the Towards Integration (awareness) programme. Questions showed firms were unaware of the benefits accruing from the adoption of best practice, and did not know how to implement exemplar methodologies. In the case of the former, attendees first line of questioning tended to focus on establishing what the benefits were. Furthermore in discussing potential projects with companies, officials found their staff unaware of the need for strategic implementation of technologies.

G.2.2.2 Establishing What Represents Best Practice

That it was best practice for firms to manage their component business functions in conjunction as part of a comprehensive, integrated strategy, was evidenced by ACARD (ACARD, 1983). The report said that firms which implemented AMT as part of their corporate strategy achieved improved competitiveness, and recommended the integration of these technologies into the overall system. The report continued by stating: "*Our principal conclusion is that senior management must see the evaluation and implementation of AMT as a fundamental part of corporate strategy and therefore as one of their own major responsibilities*" (ACARD, 1983, p. 7).

ACARD went on to conclude that corporate strategy must include strategies for manufacturing, production, commerce, finance and marketing, with the "*implementation of AMT taking into account the desirability of eventual integration into an overall system*" (ACARD, 1983, p. 8). The report emphasised the task of systems integration as being that of the greatest difficulty for firms.

G.2.3 Post ROAME Design of Delivery Strategy in Phase 1

It is helpful at this stage to discuss the aspects of programme development which took place following approval of the Phase 1 ROAME statement. Post ROAME development centred around the commissioning of a study by DTI into the procedures which should be adopted in strategic planning (PA, 1989), backed with experience gained from operating previous programmes.

G.2.3.1 PA Report: "Manufacturing into the late 1990s"

DTI commissioned a study by PA Consulting into business drivers operating in the commercial environment, and how business driver information could be used to help develop business strategies (PA, 1989). (The idea for this study originated from earlier discussions with PA Consulting, during the previously mentioned, internally led investigation). Their findings were published by DTI in a report called *Manufacturing into the late 1990s* (PA, 1989), which played a major role in helping firms understand the need for planning their operations in the context of the market.

In a discussion with the author, Mr. John Puttick, a Senior Consultant with PA Consulting, informed him of how PA approached the task of developing their report. They decided to analyse how their own consultants executed strategic research of markets on behalf of clients, and how firms are then advised in their approaches to responding to the market drivers. They identified the drivers under the general headings of Economic Factors, Demography and Lifestyles, Market Factors and Technology. How the links between these factors and the mechanisms employed in the development of the competitive strategy were investigated, and how this in turn informs the construction of an appropriate organisational and management system for a company was investigated.

The report (PA, 1989) was a primary source of reference in designing M90s. Officials designed the scheme so that both its content and structure of presentation mirrored the advice given in the PA Report. In this way officials ensured that the programme would be effective in reducing the perceived market failures. The information content was specified in terms of the best practice knowledge required by Chief Executives, to develop their business strategies. Increased participation in programme activities was observed, because the conveyed messages matched CEOs actual needs. It was also evident that transfer of information was enhanced when the activities mirror the actual process of business management. SMEs then recognised the value of the messages presented, because they could identify with them.

The PA report had again emphasised the need to integrate business activities, and, as mentioned earlier, contrasted M90s with previous awareness schemes where business issues were treated as discrete topics. (However to avoid prejudicing the Marketing Initiative operated under EI, marketing was not treated as a specific topic within Phase 1 of the programme, but was covered in Phase 2, see sub-section G.4.2.1 below).

As discussed earlier, M90s aimed to first explain the need for firms to adopt a strategic, co-ordinated approach to the planning of company operations, and then dealt with each business topic in the context of corporate planning. To achieve these objectives, M90s was constructed to provide a co-ordinated set of help packages, each providing practical advice and signposting to other sources offering further advice; both within and external to the programme. The aim was to enhance the probability of securing management action towards achieving improved competitive

performance. In this M90s fundamentally differed in its approach from earlier awareness schemes. Previous programmes focused their attention on advising firms of the business reasons for adopting best practice (awareness), whereas M90s aimed additionally to show companies how they might embark on programmes for lasting change (i.e. provision of help).

G.2.3.2 Previous Experience

Secondly, officials drew heavily on their experience gained through previous awareness programmes to encourage firms to adopt best practice in their operations. The TI programme previously mentioned and the National Quality Campaign (DTI, 1989) were the main contributors. A number of the delivery mechanisms that had previously been exploited to good effect were incorporated into the programme.

G.2.4 Development of Rationale: Phase 2

G.2.4.1 Changes from Phase 1

Phase 1 of the programme had addressed manufacturing and service companies alike. Phase 2, however, provided greater focus on manufacturing, with yet further emphasis on providing firms with help in adopting best practice, that is, knowledge of 'how to'. The latter activity was seen as helping to motivate firms to engage in activities for lasting change, as discussed earlier. This was a reaction to observations by officials that during Phase 1, too many firms were not committing to best practice projects. Discussions with firms indicated that whilst they saw the need, they did not know how to take things forward and required a higher level of education [Interview 7].

Other changes introduced in the second phase of the programme included the addition of a new set of topics, including marketing, and the scheme was renamed Managing in the 90s - abbreviated form Man '90s. The list of new introductions were as follows:

- New Product Introduction - Helping companies realise the full market potential of their inventions, through reduced time to market and greater efficiency in taking initial ideas forward to the market.
- Marketing - conversion of ideas into commercially successful products.
- Business Planning - preparation of comprehensive business plans to raise finance for product developments and the development of strategies for their implementation.
- Management of Information - management methods and techniques for defining and the handling of business related information.

Another important feature of this phase was the introduction of innovation as a discrete theme, following advice from the DTI Innovation Unit. 'Innovation' was not seen as just concerned with the development of new technologies or products, but the application of technologies and management approaches which were new to the firms implementing them.

G.2.4.2 Rationale for Continuation and Enhancement of M90s (Phase 2)

The rationale for Phase 2 was set out in the M90s Phase 2 ROAME statement (ROAME, 1991a, paragraphs 4-10). Inspection of the Phase 2 ROAME (annex B), reveals that the delivery approach remained substantially unchanged from Phase 1, and would be based on the well tested mechanisms of seminars, visits to exemplar companies, a mobile presentation ('road show'),

literature and videos. However, interestingly, the ROAME flagged a move to collaborate with other bodies in delivering activities.

The content of the programme was enhanced to reflect officials' awareness of market problems. The ROAME refers to new topics being introduced, listing them as New Product Development, Marketing, Business Planning, and the management of information. Phase 2 of M90s was to have a life of three years covering the period 1992/1993 to 1994/1995, with a spend of approximately £3 Million.

The Phase 2 ROAME states that the aim of the first phase was to address the demand-side imperfection of SMEs having insufficient awareness of good, business practice. The market failure was perceived as continuing and the second phase would continue to tackle this problem. Inspection of the ROAME shows an awareness of the need for firms to adapt to a rapidly changing world. In presenting the programme's messages, emphasis was placed on the need for firms to embark on and manage projects for change to remain competitive.

The M90s Phase 2 ROAME (ROAME, 1991a, paragraph 5) describes the basis for perceiving a continuing market failure. The ROAME referred to company surveys, DTI's experience, and reports by official bodies providing evidence of firms still failing to adopt best practice, with many being unaware of the need to improve and how to do so. An evaluation study of Phase 1 M90s, undertaken by consultants on behalf of DTI's then MTS Division, had confirmed this evidence, and the effectiveness of the approaches adopted in Phase 1 of the programme.

Annex A of the M90s Phase 2 ROAME (ROAME, 1991a) usefully details the information sources used to provide evidence of a continued market failure. The ROAME began by referring to the report prepared by the Advisory Council on Science and Technology (ACOST): *Advanced Manufacturing Technology* (ACOST, 1991), which had reinforced ACARD's findings (ACARD, 1983) by stating that most gains in manufacturing firms would come from the radical reorganisation of planning processes rather than from adopting individual technologies. A further report the *House of Lords Select Committee on Science and Technology* (HMSO, 1991) had supported ACOST's view and highlighted the most effective way of encouraging the take up of best practice was by employing those who apply it (the demonstrator effect).

The ROAME cited a paper by the Strathclyde Institute (Strathclyde Institute, 1990) as demonstrating the substantial benefits which can accrue through adopting best practice. The PA report (PA, 1989) contained case studies showing the benefits arising from specific applications of best practice.

Evidence of firms not taking appropriate action was derived from a *Survey of Small Firms in South Derbyshire* (SQW, 1991) and a *Survey of Organisational Trends in British Manufacturing Businesses* (Ingersoll Engineers, 1991). Furthermore the ACOST report *Overcoming Barriers to Growth in the Small Firms* (ACOST, 1990) reported a lack of long-term management strategy existed in firms which presented a barrier to growth.

From discussions with Dr. Melvyn Draper, the Grade 6 then responsible for M90s in DTI's MTS Division, the author was advised of other evidence which had contributed to the rationale for continuing with M90s. Industrial surveys contained in *The Machine that Changed the World* (Womack et al, 1990) contrasted the traditional mass production approach, largely adopted in Western Economies, with the Lean Production techniques employed in Japanese industry. The book showed the benefits obtained from a co-ordinated approach to the minimisation of waste, including the integration of manufacturing systems. Departmental experience gained from operating the Consultancy Initiatives, M90s Phase 1, and the MPI programme, showed most SMEs continued to fall substantially short of best practice, and exhibited little or no awareness of the need to improve, nor how they should go about doing so. (Evidence of the latter was contained in the above mentioned evaluation study of the first phase of M90s).

For the on-going development of Phase 2, PA Consulting were commissioned to update their report, *Manufacturing into the late 1990s* (PA, 1993). The second edition involved restructuring

of the content, and took account of changes in the business environment. Subjects such as the development of business strategies, for example, were now placed in a dedicated section, and new topics were added. New product introduction was a particularly significant addition: PA highlighted the importance of being fast enough to be first into the market with the right product, as worth more to most businesses than any other single management or manufacturing action.

The appearance of new product introduction in Phase 2 (Man '90s) is therefore not surprising, but the idea of covering this topic within M90s predated the PA Report. In the latter stages of Phase 1 there was much discussion within the department and elsewhere, about the proven ability of the British to innovate, but their inability to exploit the potential of innovations in the market.

DTI thus commissioned KPMG to investigate the performance of firms in bringing products to market. The Consultancy reported in August 1991 (KPMG, 1991), recommending that the time was right for DTI to launch an initiative that would stimulate action and bring about an 'innovation renaissance' in UK manufacturing firms. The report set out the argument for such an initiative and recommended the approaches to be adopted. Most firms were found to have failed to understand and improve the overall process of introducing new products.

The potential benefits in terms of profitability, through improved efficiency in product introduction, were discussed. Performance was found poor compared with many Japanese firms. KPMG also drew attention to the lack of market information in firms, with very few questioning their customers about their future plans. This latter point helped reinforce the case for continuing with Phase 2 of M90s. The content of the report was used as the source material for M90s literature and events.

G.3 Objectives

G.3.1 Phase 1 Objectives

Bearing in mind the extent of market failure, the overall objective was set as at least 60% of those attending an event would change their management methods. In the Phase 1 ROAME (ROAME, 1988a, paragraphs 8-11) under the heading of OBJECTIVES, the quantitative targets were set as:

"*at least 25 management action briefings a year, total attendance of 2,000 firms;*

at least 25 workshops a year on aspects of M90s, attended by 1,250 firms;

mobile demonstration unit visits to 30 sites a year, total attendance 10,000 people;

400 visits to demonstration firms a year involving 2,400 people",

(ROAME, 1988a, paragraph 10).

It was intended to revise these targets after the first and second years of the programme.

G.3.2 Phase 2 Objectives

The Phase 2 ROAME (1991a, paragraphs 11-16) set the following targets for M90s for the second phase as follows:

"*The strategy road show will visit at least 30 sites with total attendance of at least 6,000 people;*

At least 80 seminars and workshops will be held on aspects of the programme, with total attendance of at least 4,500 people;

At least 400 visits to demonstration firms will be organised involving at least 3,000 attendees;

At least 400,000 booklets will be dispatched and 30,000 videos loaned to interested companies;

A new private sector quality award will be created, building on the achievements of the British Quality awards";

(ROAME, 1991a, paragraph 15).

G.4 ROAME Approval

G.4.1 Approval of M90s Phase 1

Officials eased the approval process by being able to demonstrate the conformity of their proposals with government policy. As discussed above conformance was shown by referencing problems identified in the DTI White Paper, and the department's role of spreading awareness of best practice. The Phase 1 ROAME statement also showed how M90s would operate activities in each of the areas highlighted as important in the white paper, such as design and quality: Because all programmes now had to fit into the Enterprise Initiative hierarchy, M90s was portrayed in the ROAME as underpinning the EI.

M90s was seen as particularly supportive of the Consultancy Initiatives, helping to increase VFM. It was argued that M90s would add value in two ways. Firstly firms with limited knowledge of the business topics could participate in M90s prior to starting a consultancy project, thus gaining an initial understanding of the issues and how they may be solved. Secondly firms successfully completing their consultancies could participate in M90s activities to gain further help. In this way M90s was seen as adding value to firms projects.

Officials also took steps to ensure that the ground was made fertile for approval, by ensuring that ministers and senior management were receptive to proposals for M90s [Interview 5].

As mentioned earlier, originally officials submitted a case for the continuation of TI to the Secretary of State, Lord Young, immediately prior to the announcement of the Enterprise Initiative (EI) in January 1988. The Secretary of State believed the TI scheme conflicted with the Consultancy Initiative component of EI, and rejected the case. An observation at the time was that the Secretary of State regarded EI as very much his 'baby', and therefore was unlikely to approve a scheme which might prejudice the performance of the 'Initiative'. This was considered to be a contributory factor in the failure to obtain his approval [Interview 5].

Six months after the rejection of the case for extending the TI scheme, officials submitted proposals to ministers for the M90s programme. Revised approval criteria required divisions to submit proposals for self-contained programmes of work, rather than for the single 'stand alone' projects which had previously been the norm. The Secretary of State also required all programmes to be operated under EI. To satisfy the revised criteria the case now described a set of activities dealing with four subject areas, in contrast with TI which had focused on manufacturing as a single topic. Officials successfully secured approval for Managing into the 90s.

However the operating concepts for M90s were little different from those of TI. The fact that the novelty of EI had worn off and was becoming established was believed by the officials concerned to have been a significant factor in the Secretary of State agreeing to another scheme within EI.

Thus the importance of timing submissions to ministers is indicated by the order of events detailed in this scenario.

G.4.1.1 Approval Sequence

The author spoke to Mr Peter Munday (a PR9 in DTI's Small Business Service) who was directly involved in the development of M90s. Munday was able to confirm that initial proposals were submitted to AMTC for members' discussion, (the AMT Requirements Committee), after which the case for M90s was formally presented to the IPC and thence to ministers for their approval. This was the case for both phases of the programme. (Presentation of the phase 1 ROAME to the IPC is also indicated by the IPC reference number appearing on the document, that is IPC(88)163. Presentation to ministers in both cases is indicated in the record of the interview with Dr Draper [Interview 5]).

G.4.2 Approval of M90s Phase 2

Steps were taken during Phase 1 to make the ground fertile for approval for Phase 2. For Phase 2, Project Officers made ministers receptive to proposals for extension of M90s, by educating them about the problems faced by firms, and the suitability of the programme to alleviate them. Firstly, following the October 1989 Cabinet reshuffle, the Manufacturing and Information (MIT) Division persuaded the Under Secretary for State for Industry (Mr Hogg) via his private office, to attend a M90s Management Action Briefing seminar. Later, he was invited to launch a M90s report (the PA report) at a press conference in November 1989 [Interview 5]. A submission to the Minister dated 24 November 1988 'reminds' him of his previous agreement in principal, to attend. In support of his launching the report, the submission refers to a ministerial brief being attached. The brief contained details of who from the press had been invited, and the recommended text for his opening statement. The prepared statement outlined the content of the PA report, and how its recommendations were to be implemented within the Managing into the 90s programme. A list of anticipated questions, and suggested answers were also provided. The Minister was also informed that officials and representatives from PA would be on hand to help field questions, and that the minister's formal briefing, including questions and answers, was not expected to last more than 30 minutes. Senior civil servants reported that the Under Secretary of State became very supportive.

Later a briefing for the Secretary of State apprised him of the current activities undertaken by the Division and their status. This briefing coupled with the support of the Under Secretary for State were seen by officials as probably being instrumental in the Secretary of State agreeing to Phase 2 of the programme.

Other points of influence in the approval process were also 'educated' and thereby rendered receptive to proposals [Interview 5]. The M90s report by PA Consulting was sent to the Deputy Secretary of ACOST, so influencing their recommendations. Consequently, recommendations supportive of continuing M90s were published. Copies of the PA Report were also circulated to ministers and senior officials, which also served to influence their thinking positively towards the programme.

G.5 Programme Implementation

G.5.1 Programme Delivery Strategy: Phase 1

Evidence had clearly shown the need for firms to adopt best practice in specific areas of management, and integrate the management of these business functions. It also showed that

encouraging firms to adopt an holistic approach to their management should be an important feature of M90s. Officials also recognised that it was important for firms to have access to the knowledge required to implement best practice if they were to become committed to change. Access was provided in two ways. Firstly M90s undertook to educate firms in the subject of best practice, and secondly to signpost them to additional sources of advice and help.

Experience of operating the previous Towards Integration (TI) programme had shown the effectiveness of adopting a hierarchical structure to programme activities, in which participants could receive increasing levels of advice and help, dependent on their specific interests. The approach was further developed in M90s, and continued to be consistently successful in its application within the Programme. Experience had also shown the importance of face to face contact in transferring knowledge, and this mechanisms was exploited in a number of the activities supported, for example in seminars and workshops.

The objective of the delivery strategy was to motivate firms to commit themselves to business strategies for lasting change. The approach adopted was to target board directors and other senior managers within firms [Interview 5]. Emphasis was placed on making these senior personnel aware of their need to adopt best practice. Chief Executive Officers (CEOs) are the decision makers, and their 'conversion to the cause' was seen as fundamental to achieving commitment to change (ACARD, 1983). Raising initial levels of awareness within companies represented the first step in the education process. The author observes that the principle of 'sensitisation', a term he found often used in EC meetings which he had attended, was employed in which the business rationale for adopting best practice is explained to CEOs, and the benefits demonstrated by example thus creating an interest in 'change'.

Once sensitised, firms become receptive to the delivery of follow up activities that reinforce the initial messages. Follow up activities focused on providing firms with information on how best practice approaches can be adopted. Answering the question 'why' was designed to create a desire for change, and describing the 'how' of implementing best practice then helped secure a commitment to change. Creation of interest in adopting best practice at every stage motivated CEOs to find out yet more, and prompted them to participate in other M90s events, thereby continuing to build their knowledge and commitment to change. The author notes that the process of making firms aware and motivating them to take action, is achieved through influencing people's cognitive structures (Lewin, 1952, pp. 79-84).

Inspection of the M90s, Phase I ROAME (DTI, 1988a, annex A) reveals the overall structure of the activities supported. Because plans for Phase I of M90s were prepared in haste [Interview 5], a significant proportion of programme development took place after the programme was launched. Therefore proposals for the alleviation of failures in the first ROAME statement were described in general terms, and listed the following activities:

a) Main Brochure;
b) Management Action Briefing Seminars (MABs);
c) Workshops and Seminars;
d) Mobile Demonstration Units;
e) Demonstration Firms.

Activities (a), (b), and (d) were the main vehicles for sensitisation and initial education in best practice. Items (c) and (e) sought to build a lasting commitment for change.

Exploitation of the signposting mechanism was an important feature of M90s. To make programme participants aware of related activities, anyone attending an event or reading M90s literature was informed about all other M90s events. Programmes such as the Consultancy Initiatives and the Manufacturing, Planning and Implementation (MPI) programme, where practical help in managing

projects for change could be obtained, were also signposted. It is interesting to note that colleagues reported to the author that a number of participants received help in this way.

G.5.2 Programme Delivery Strategy: Phase 2

Many of the delivery mechanisms adopted for Phase 1 continued in use for Phase 2. The MABs were replaced as the flagship activity by the Strategy Road Show, which was a mobile seminar based on three road trailers.

Inspection of the Phase 2 ROAME revealed a further difference. The second stage saw the introduction of a hierarchical structure to programme delivery; that is, a programme comprising of national, regional and local activities. Phase 2 saw an increased use of intermediaries such as the professional institutions, the TECs (Training and Enterprise Councils), and bodies such as the Confederation of British Industry (CBI).

Examples of M90s activities (Phases 1 and 2) are explained in detail in section G.8 below.

G.5.3 Programme Administration and Promotion: Phases 1 and 2

M90s was administered by officials employed in DTI's then Management and Technology Services (MTS) Division (DTI, 1995, p. 3). External contractors were appointed to manage the day to day running of the individual programme activities. Their responsibilities included the detailed design and production of events such as seminars, including audience building and the production of promotional literature. In support of event design contractors talked to consultants and representatives of industry in the development of event content. Contractors were normally appointed using competitive tendering procedures. For example, HP ICM were appointed by competitive tender to manage the Management Action Briefing Seminars.

Regular meetings to monitor progress and spend, were held with each contractor. The author held such meetings with HP ICM where progress, problems arising, spend, and the need for additional funding was discussed. Mr John Launchbury, the official responsible for the operation of the Inside UK Enterprise (IUKE) scheme, informed the author that he makes monthly monitoring visits to the contractor, Status Meetings Limited, who are responsible for delivering the initiative. During the visits he checks with the company scheme progress including marketing, and monitors how DTI's money is being spent. Launchbury also confirmed that the contractor was appointed through competitive tendering.

G.5.4 Appraisal: Phases 1 and 2

The Phase 1 ROAME (ROAME, 1988a, paragraph 13) considered the appraisal of applicants in M90s to have been inappropriate, because there was no direct financial assistance to participating firms. Unlike the R & T Initiative or CI, M90s did not involve the award of grants to companies by way of encouraging them to take action. Any firm could participate. However inspection of the Phase 2 ROAME (1991a, paragraphs 17-19) indicates that an appraisal function was involved in the overall programme. This role was largely the responsibility of the M90s Steering Committee, which co-ordinated the strategic planning of M90s and reviewed the depth of programme content. The Committee reviewed and approved plans for individual activities, and the production of guidelines to assist in the administration of these activities. The Committee was also responsible for overseeing the process 'Monitoring'.

G.5.5 Monitoring: Phases 1 and 2

The monitoring procedures were set out in the phase 1 ROAME (ROAME, 1988a, paragraphs 14-16) and were designed to allow regular review and adjustment of the programme, and obtain data for the planned evaluation of the scheme. A number of quantitative and qualitative methods were employed as follows:

(i) Quantitative:

"(measurement of) *the distribution of literature etc.;*

volume of take up of activities under the programme;

volume of take up of further sources of advice and assistance under the signposting service",

DTI, 1988, paragraph 14).

(ii) Qualitative:

Short, simple questionnaires were issued to all participants attending 'live events'. These aimed to test reaction to the events, and ask what action participants planned to take as a result of attending. A 10% sample of those attending were approached later to see how many companies subsequently took action.

Monitoring of programme performance was undertaken on behalf of DTI by consultants, St. John's Innovation Centre, Cambridge (St. John's, 1992). St. John's prepared quarterly Tracking Reports which evaluated scheme performance by activity, to check the programme met its ROAME targets. Based on an analysis of performance the reports recommended changes in the design of the programme when appropriate.

The Phase 2 ROAME (1991a, paragraph 24) speaks of qualitative monitoring being affected by exit questionnaires from live events, questionnaires circulated on a sample basis to recipients of literature and videos, and event attendees. The M90s Steering Committee regularly reviewed reports on the monitoring out-turns of individual activities, checking progress against objectives.

G.6 Wider Benefits

An additional benefit was realised in M90s by the sale to the public of both versions the PA report (PA 1989, 1993), which played a major role in helping firms understand the need for strategic planning.

G.7 Programme Evaluation

Inspection of the M90s evaluation report (DTI, 1995, pp. 6-7), (evaluation was undertaken by DTI's Assessment Unit and their report comprises 22 pages) reveals the evaluation method which was adopted. It comprised discussions with academic experts on the validity of the programme rationale, and examination of the programme monitoring returns, which were described as extensive. Information collected was supplemented by some field work.

Six experts, four in academia and two in consultancy, were questioned over the validity of the programme. Specifically they were asked for their views on whether precepts on best practice existed which were wide enough on the one hand to be generally useful, whilst on the other are sufficiently specific to be followed.

Monitoring data was used as an information source in determining programme performance. In addition to exit polls the monitoring data included information gathered from 340 responses to a telephone questionnaire. Face to face interviews with a small sample of M90s participants were also conducted, to gauge whether the content of activities was appropriate to firms' needs and to assess the value of the benefits accruing to them. The number of firms visited was small. The evaluators explained that unlike the case in grant award schemes, there was no obligation placed on M90s participants to take part in DTI follow up studies. It was thought that many firms would not agree to being interviewed.

In the light of the above observations it was decided to approach the 38 companies who had previously indicated their willingness to take part in an evaluatory study. In the end only 18 firms were visited, the lower number due principally to the relevant people having 'moved on'.

G.8 Examples of Programme Delivery

G.8.1 Specific Mechanisms

G.8.1.1 Sponsorship

The Managing into the 90s programme saw DTI enter into commercial sponsorship for awareness activities for the first time. The Management Action Briefing Seminars and Strategy Roadshows attracted significant funding by commercial organisations. When developing the MAB programme, insufficient funds were available from the Innovation Budget to support the seminar design proposed by the successful contractor. Funding received from Lloyds Bank supplemented DTI funds enabling events to be staged using a no-compromise design. Officials found sponsorship by 'household names' brought another advantage. The credibility of delivered messages, and hence their acceptance as good advice, was raised by involving a large company that was viewed by participants as being exemplary in business management.

Among organisations involved were Lloyds Bank (which as discussed previously sponsored MABs), and then the Trustee Savings Bank (TSB Bank plc), IBM, COMPAQ and Microsoft (which all sponsored the Strategy Roadshow). Sponsorship took the form of financial support (Lloyds Bank and the TSB), or the provision of free equipment, software, and services (e.g. COMPAQ provided 'laptops' with colour screens).

Corporates will normally only sponsor activities if they are able to derive commercial benefits. Lloyds Bank was provided with access to potential clients. Its services were promoted by having its logo on the MAB promotional literature and on the event display boards. A bank official addressed attendees at each event, and information about bank services was contained in the delegate packs.

G.8.1.2 Underwriting of Awareness Activities

The author interviewed Mr. David Ellis, the Grade 7 responsible for operating a series of quality seminars under M90s [Interview 10]. In these seminars, the contractor responsible was asked to run the events without direct finance from DTI, and allowed to charge delegates to recover his costs. To lessen the risk and secure agreement by the contractor, the department agreed to make good any incurred loss to an agreed maximum. The seminars were so successful that DTI never had to compensate the contractor for a loss; in fact he made a good profit.

This shows the value of underwriting a contract of this sort as a means of reducing departmental expenditure. However part of the success in this case must be attributed to the high level of interest in 'Quality' at the time of the events. Whilst underwriting costs has potential, the likely success of an event must be assessed in terms of the public interest in the subject material to be delivered.

G.8.2 Examples of Activities Supported

G.8.2.1 Management Action Briefing Seminars

These seminars were the flagship activity during the first year of Phase 1. They broke new ground in the delivery of awareness messages.

Boards of directors are responsible for the policy of their firm. A campaign of awareness activities must first target senior executives at director level. The initial phase of M90s needed to deliver the 'best practice message' to them in a way which would convince them of the need to commit themselves to change.

A programme of purpose designed presentations called Management Action Briefing Seminars (MABs) was the mechanism chosen. A total of 25 events were staged between 20 March 1989 and 23 November 1990, with Lloyds Bank contributing significant sponsorship funding.

For a seminar to be successful, the target audience must attend, and their interest captured and maintained so that they become and remain receptive to new knowledge. For MABs the awareness criteria chosen to achieve these aims were:

- The programme to have a high profile;
- Activities tailored to suit work arrangements of SME board members;
- Seminar format to contain an element of novelty;
- Seminar content relevant to the operation of manufacturing companies.

High Profile - A high profile gives events an image of importance, fostering the desire to attend. This was realised by having a minister to introduce the events and Lloyds bank, a 'high street name', to sponsor the programme.

Tailored activities - Directors of SMEs are usually short of time. To increase the probability of directors attending, each seminar was limited to one half day, and the events staged on a regional basis to reduce travel time for the senior executives.

Novelty - The seminar used 'live action' to achieve novelty in the MAB presentations, a 'first' for DTI. Actors acted out typical boardroom scenes in a sequence of playlets. The idea of playlets had been successfully used by British Airways in staff training. These illustrated typical business problems and showed the responsive actions taken to make the business more competitive. After each playlet a panel of experts from exemplar companies reinforced the playlet messages by discussing the points raised. Then discussion was opened to 'the floor'.

Location was also used to provide novelty. Each event took place at the premises of a large prestigious company known for its exemplar role: the hosts included JCB, Boots and British Airways. Their involvement raised the profile of the events and reinforced the credibility of the messages delivered. Smooth running of proceedings was achieved by using a professional 'link man' to manage each element of a seminar. His role was critical to the MAB programme realising its objectives, and comprised the following elements:

- to maintain a seamless handover between each programme segment, and at the end of each seminar, to signpost delegates to the M90s programme and activities;

- to begin message reinforcement by summarising the message of each playlet, and, to use his summary to give the panel a starting point for discussion. (The composition of each panel was different for each event);
- to keep panel discussion to the point, ensure that important issues are aired and each panel member has the opportunity to contribute.
- to summarise the message emanating from the panel to stimulate the audience to contribute in open debate, to ensure that the debate remains relevant, and that as many people are heard as possible;
- to close the open discussion session at the appropriate moment, and to introduce the next segment of the presentation.

The role of the link man is demanding. He must be business literate so he can summarise the points raised correctly and usefully contribute to the debate. He must be a good communicator, skilled in co-ordinating diverse activities to form a well structured 'whole', and able to reinforce and expand the messages being delivered. The person chosen was TV presenter Cliff Michelmore, whose celebrity status also raised the profile of the events.

Seminar Content - The playlet scripts were based on real life experiences of SMEs and so were perceived as relevant. The department organised a meeting comprising the script writers, officials, consultants and representatives of Industry, to inform the scripting process. The expert panels themselves always included staff from small firms. The panel of the day had spent an evening with the Link Man who guided them about the issues to be discussed. This allowed him to develop a rapport with the panel, to advise them of playlet content making sure that in responding the best practice messages were built upon. The meeting also engendered a feeling of being part of a team amongst the panel members.

The author set up the MAB programme and ran the scheme during its initial stages, and the above is drawn mainly from his own observations.

G.8.2.2 Strategy Road Show

The Strategy Road Show was a mobile seminar unit touring the commercial centres of the UK. Replacing the MABs it introduced the topic of best management practice to senior management. The seminars explained how the adoption of best practice contributes to competitiveness, and demonstrated the potential benefits. Ideas for change were presented which delegates could implement in their own companies.

As the show introduced the whole M90s programme, it provided signposts to all the other M90 activities. These were referred to during the presentations and attendees received a delegate pack containing M90s brochures (see below) on leaving the show. The delegate packs also included a summary of all current government schemes which provided assistance to firms.

Mobility contributed to success by making the messages more accessible to the target audience: the messages were taken to the audiences. The presentation format was developed from the successful Management Action Briefing seminars. A set of short, thought provoking 'message modules', grouped under a number of main management themes, were linked together by a master of ceremonies, whose role was important in providing a structure to the events.

No two shows were the same. The participants steered the show by selecting the topics most relevant to them. Selection was democratic, those attending voting on the issues to be discussed. The sense of ownership of a unique show generated by the voting system was seen as key to capturing and maintaining attention. An interactive video system was used for message delivery. At the heart of the system was a CD-ROM system with around 1000 'message modules'. Each module had screens of bullet points and video clips filmed at exemplar companies. The selected sample of video segments was different for each session, according to the results of delegate voting.

The voting system was used by DTI to obtain feedback on the concerns of SMEs. Delegates also rated the relevance of the show in the running of their companies, and their intentions to take resultant action. The information collected was used to tune message content, and develop further awareness programmes. The road show was administered by the contractor Crown Communications Limited, who were appointed using competitive tendering procedures.

G.8.2.3 Literature and Videos

As with the programme itself, a hierarchical structure of brochures, categorised by their level of detail, was adopted for the literature. The level one introductory booklet, *Managing in the '90s*, was designed to complement the Strategy Roadshow. It helped senior managers understand the relevance of best practice. Key to the success of the educational process was the use of self assessment checklists. Under a series of business themes such as 'Marketing' and 'Quality', the reader is made aware of the issues involved, the best practice actions, and invited to check the status of his own company in addressing the issues. This helps educate him and builds his commitment to take action. To encourage him to take further steps the booklet directed him to other schemes offering help and advice.

Supporting the main brochure, was a set of Level 2 booklets provide more detail on each of the M90s themes. Level 3 brochures discuss specialist topics such as the application of Just-In-Time. An action pack helps companies to manage their supply chains.

A newsletter *90s News* was circulated quarterly to event participants and other interested parties. Well received by SMEs 90s News gave an event calendar, reports on M90s events and featured case studies of successful projects for change. Videos describing projects implemented by exemplar companies were at one time also available on loan.

G.8.2.4 Inside UK Enterprise Scheme

In the Inside UK Enterprise (IUKE) scheme, SMEs are invited to visit firms which are exemplary in the application of best manufacturing practice. This reinforces the messages received by visiting the Roadshow or reading the main booklet, helping firms make positive commitments to improve. Visitors can see for themselves the benefits accruing from adopting the best practice. A lecture from a champion of best practice projects is followed by a conducted tour of the 'shop floor'. Visitors can ask staff questions about how projects were implemented. Host organisations also benefit: many find new suppliers and learn of new developments from talking to visitors. Mr John Launchbury, the official responsible for the operation of IUKE, informed the author that the initiative had been adopted by the Canadian, German, and Austrian governments. The IUKE model has also been adopted in the Netherlands, and in the Basque region of Spain.

G.8.2.5 Total Quality Seminars

The main activity in phase 1 was a series of one day, Total Quality Management (TQM) seminars. They sought to help firms understand the concept of total quality and show how it contributes to competitiveness [Interview 10].

Each quality seminar started with an introductory talk explaining TQM and its relation to improving business performance, followed by a series of presentations dealing with specific aspects of TQM.

Four main delivery mechanisms were used to convey the awareness messages. First a high profile chairman, performing a similar role to the link man employed in the MABs, with good communication skills and a knowledge of the subject matter, was engaged. The TQM seminars employed Vincent Kane OBE, a broadcaster on TV Wales: he had a personal commitment to quality, receiving the OBE for his part in establishing the Wales Quality Centre. The second strand was a presentation by a leading expert on quality, Professor Oakland of Bradford University.

His role of expert presenter was later expanded to make him available all day for consultation by delegates. Thirdly a DTI speaker reinforced the best practice messages and signposted delegates to other M90s activities and the Consultancy Initiatives. Finally, case studies were presented by representatives of organisations which had adopted TQM. The concept of 'industry people talking to industry people' was important to establish the perceived relevance of the programme content. The approach was reported as well thought of by delegates.

Organisation of the quality events, including audience building, was contracted to a specialist company (IBIS), which received no fee from DTI. Under the terms of their agreement, they charged a delegate fee with their costs underwritten by the department. The seminars were so successful that DTI never had to compensate IBIS: indeed its staff reported that IBIS made a good profit!

G.8.2.6 Purchasing and Supply Seminars

The Purchasing and Supply seminars were the main activity in the 'Purchasing' module of M90s. These spread best practice amongst firms in the areas of purchasing and supply. An interview was held with Mr. John Oakley, the Grade 7 responsible for developing and operating this element of M90s [Interview 7]. Mr. Oakley was able to provide details describing the background to introducing the Purchasing Seminars, and insights surrounding the choice of the delivery mechanisms employed.

Mr. Oakley began by stating the overall objective of the scheme was to make firms aware of the benefits to purchasers of building closer working relationships with suppliers, in particular the benefits arising from:

- faster and more effective product development by involving suppliers directly in the design process,
- calling on the strengths of the many to overcome weaknesses in the individual organisations (a win-win scenario),
- being privy to a purchaser's vision: suppliers can work with him to realise the vision, to mutual benefit,
- lower costs through increased efficiency.

The rationale for operating the Purchasing and Supply module of M90s grew from the following observations:

- Research by Cardiff and Glasgow Business Schools together with others (the details are not on file) showed SMEs were unaware of the need to adopt best practice, because they did not know of the benefits afforded. (The Cardiff research was undertaken to support the book *The Machine that Changed the World* (Womack et al, 1990).

- The need to establish firms capable of working closely with Inward Investor companies, such as Sony.

Two series of seminars were held, aimed at senior purchasing staff and at other managers. The first series comprised 25 one-day events at different locations around the country. These focused on increasing awareness of the benefits of, and hence the need to adopt, good practice in the

purchasing of goods and services. The format comprised of presentations by a 'guru' in Purchasing and Supply, (Dr. David Farmer), an industrialist from a nationally renowned company, an industrialist drawn from the local community of firms, and a Cardiff Business School academic.

Using this well known expert and an academic from a leading university helped the messages to be taken seriously. The industrialist reinforced the message from his real life experience, establishing credibility, and thereby building commitment to change. Short formal presentations were followed by an interactive session, when delegates could question the experts. The question time reinforced the messages, further building commitment to act.

The second series of events were half-day workshops held at various locations across the UK. The format comprised a presentation on supply chain management by a resident expert (Mr. 'Ted' Lindsey, ex IBM), backed by videos of case study material. The workshops contrasted with the earlier series of events, in that greater emphasis was placed on the 'how' of implementing best practice. Again an interactive session followed, when delegates could ask questions. The resident expert was also available for private one-to-one discussion at the close of each event.

Again this used the principle of gradually building commitment, with attendees offered successive levels of help. The facility to discuss topics one-to-one with the expert was particularly important, as it provided firms with an opportunity to discuss solutions to their particular problems.

The seminars and workshops were located in areas of the country with low levels of awareness. Research had shown that in certain areas of the country (Central Scotland, including Fife and Deeside, the North East of England, South Wales, and Telford) suppliers were already working closely with purchasing organisations. Firms in these areas were influenced by, in particular, the large Japanese Investors, who required close working relationships with their suppliers (and the adoption of best practice generally). Elsewhere, the 'partnership sourcing' culture was absent, so the seminars were targeted on these areas.

While running both series of events, officials witnessed the success of their intervention through listening to questions asked by delegates. Initially, questioning had the common theme of "what are the benefits?". Later, attendees were largely aware of the benefits, but wanted to know what to do to realise them. The success of the workshop format in bringing firms into contact with experts, helped seed the idea for the Supply Chain Network Groups, discussed below, which were also located according to the need.

G.8.2.7 Supply Chain Network Groups

Operated under the Purchasing and Supply section of M90s, and forerunner to the business Self Help Clubs (see below), the Supply Chain Network Groups (SCNGs) were a response to feedback from the workshops on best practice in Purchasing. Attendees' comments revealed very limited knowledge of Supply Chain Management, motivating DTI to act to correct the failure. Based on a Scottish model, officials introduced the SCNGs initiative in 1994 to improve awareness, and advance supplier development. Organisations were invited to submit proposals for grants to support development and operation of the groups. Parties interested in supply chain management, including SMEs, large companies, universities, Business Links, and Regional Supply Offices, were brought together.

For each group, the lead organisation formed a steering committee to oversee the development and operation of their group. Group activities typically included lectures on supply chain management, visits to exemplar companies, training workshops, and the formation of consortia to respond to large purchase opportunities.

DTI's support was implemented as 'Pump Priming', with grants awarded to provide two years funding at a level of 50% of costs, plus a further discretionary year with support reduced to 25%.

To-date 21 groups have been set up. The author became responsible SCNGs, on 1 April 1996. SCNG participants regard the groups as highly successful and adding value.

G.8.2.8 Action Packs

As another weapon in the armoury to improve competitiveness of suppliers, an action pack called *Managing the chain from suppliers to customers* was introduced. Written for DTI by Logistics Consulting Partners, the pack functions both as a training vehicle and as a toolkit for firms to use to optimise their supply chain operations.

The pack, comprising an educational booklet and a set of performance matrixes, uses the principle of self-assessment. The booklet discusses supply chain issues and their resolution, and lists the important performance metrics. Then firms are invited to assess their standing in each area of supply chain management. Each performance matrix is dedicated to a particular area of measurement and printed on a separate card.

The booklet guides the reader through the assessment process by explaining what is to be achieved at each stage. It shows how performance is measured and gives possible scenarios for any shortcomings detected. Firms are helped by examples; the matrixes are pre-completed for an imaginary company, showing the types of data to be collected and how to use them. Instructions printed on the cards also help by itemising each step needed to complete a matrix. Feedback from users of the pack to DTI officials has been very positive.

G.8.2.9 Self-help Clubs

Self-help or Competitiveness Clubs are communal activities involving predominately but not exclusively SMEs, with activities that seek to improve the competitiveness of members. The improvements arise through helping the diffusion of best practice by mutual encouragement. The idea of encouraging business clubs to form among SMEs came from the success of the Supply Chain Network Groups, discussed above.

The clubs are based on the fact that people often learn through their peers. Clubs provide opportunities for people to create personal relationships across firms, facilitating discussion of problems and solutions. Inter-firm links also encourage collaboration between companies to share resources and risks.

The second phase of M90s encouraged the formation of Competitiveness Clubs by providing support material. No financial aid was given for club formation: this was a significant departure from previous departmental policy.

A directory of clubs and a club starter pack offering advice on how to establish a club was produced. A guide for Club administrators encouraged them to promote best practice actively.

G.8.2.10 Benchmarking Guide

To motivate improvement, a benchmarking guide, called *The Winning Report*, was produced. In this, directors of 100 exemplar firms give their views about what had contributed to the success of their companies in applying best practice to the management of their business operations This helps firms compare their performance with the achievements of the 'best'.

The guide was based on a survey undertaken by officials and consultants. To identify firms to be interviewed, the department drew on contacts made by industrial secondees employed in the Innovation Unit, officials' own experience, and staff employed in intermediary organisations.

The good practice mechanisms employed in M90s are evaluated in appendix K, section K.3.4.

APPENDIX H

THE MANUFACTURING, PLANNING AND IMPLEMENTATION STUDIES PROGRAMME

APPENDIX H THE MANUFACTURING, PLANNING AND IMPLEMENTATION STUDIES PROGRAMME

H.1 Introduction

The Manufacturing Planning and Implementation Studies Programme (MPI), was a consultancy scheme. Launched on 1 June 1991, the programme was conceived to help manufacturing SMEs use Advanced Manufacturing Technology (AMT) more effectively. MPI provided grants of up to £50K, to help SMEs fund projects for the strategic planning and implementation of AMT. MPI was targeted at SMEs employing between 100 and 500 people.

H.2 Issue Identification

H.2.1 Developing Programme Ideas

The next two sections show how the development of programme ideas comprises the two elements of conceiving ideas and then seeking approval to develop initial proposals into ROAMEs.

H.2.2 Conceive Idea

The author, as a member of DTI's former Manufacturing Technologies Division (MTD), was directly responsible for developing and implementing MPI. He is thus able to call on his own experience in relating to the circumstances that led to the development of the programme. His observations are backed by the findings of an interview with Dr. Melvyn Draper (a Grade 6), who at the time was deputy head of branch assigned with overall responsibility for the introduction of MPI [Interview 5]. The idea began with the perception that SMEs needed to adopt a strategic approach in planning their business operations. Officials perceived this requirement as a result of evidence derived from a number of sources:

- Reports on previous DTI schemes, especially the Micro Electronics Application (MAP) programme and the AMT Planning Studies Consultancy Scheme. The official responsible for MAP and the author's line manager Dr. Melvyn Draper, told the author in conversation he had become aware that firms lacked knowledge of the benefit new technologies afforded, and of how to realise these benefits. The report of the previous AMT Planning Studies Consultancy scheme (NEL, 1992) showed that additional benefits could be realised if AMT planning was undertaken strategically: that is, in the context of the market.

- A paper *The Development of Information Integration: Beyond CIM?* (Fleck, 1988) reported the absence in many western companies of the improved levels of productivity presumed to follow the introduction of new technology. Fleck (Department of Business Studies, Edinburgh University) prepared his paper under the Economic and Social Research Council (ESRC), "Programme on Information and Communications Technologies" (PICT). He cited cases where a general decline in productivity had accompanied greatly increased use of new technology. By contrast, Japanese Industry had improved productivity by adopting low technology approaches like Just In Time (JIT) and Total Quality Management (TQM). JIT and TQM philosophies in manufacturing integrated people into the total operating system of the manufacturing organisation.

- A book, Innovation and Industrial Strength, (Cox and Kriegbaum, 1989), published by the Policy Studies Institute, investigated the role of technology in improving competitiveness, and reinforced many of the findings of Fleck's paper about the need for integration. It used economic performance as the measure of success, analysing how companies generate and use wealth. It describes a manufacturing enterprise "*as a highly complex and sensitive organism - with boundless options in its choice of markets, processes and product range*", (p. xiv). Reference is made to the ripple effect whereby any decision by one area of an organisation affects operations elsewhere.

- An article, "Britain's Best Factories", (Management Today, 1989, pp. 68-96), showed how performance in firms might be improved and the size of the benefits attainable through the appropriate use of technology.

- An internal DTI Manufacturing Management study (MAM, 1988) (see appendix G on M90s) of the problems faced by manufacturing SMEs in using new technology and management systems provided evidence of lack of knowledge in the strategic implementation of AMT. SMEs could not give continuous time to projects for implementing new technology and management systems, and were unable to field suitably qualified staff to resource project work. Firms often learned (sometimes too late) by their own mistakes. This lack of resources suggested SMEs should make good their management shortfall by hiring external consultants.

The evidence had shown that most SMEs were not realising the benefits of new technology, and consequently there was a market failure. Integration of business applications was seen as fundamental to competitiveness, and failure to achieve the expected benefits was put down to AMT not being employed strategically and to achieve system integration. Moreover, firms failed to adopt a holistic approach in planning and implementation through a lack of understanding of what was viewed as a complex subject.

As SME management generally has limited time to plan, and as CI had successfully shown the effectiveness subsidising consultancy in compensating for a lack of qualified resources within SMEs, officials felt that the best approach in reducing market failure was to encourage firms to hire external advisors by offering grants.

H.2.3 Test Validity of Idea

A minister's request at a meeting with the Head of the Research and Technology Policy (RTP) Division triggered the formal structuring of ideas for MPI. The Minister was concerned by the low rate of expenditure of the Innovation Budget and asked for proposals for new initiatives. Officials in DTI's MTD seized the opportunity to proceed, and sent a minute to senior management (Grade 5 level) outlining the case for MPI. The minute suggested there was enough evidence to justify funding MPI and that resources should be committed to develop a formal case for support. The minute briefly described the perceived market failures and outlined the strategy for addressing them. Fleck's paper (Fleck, 1988) was presented in parallel to reinforce the argument for support.

At the same time, other parties with an interest in any resulting scheme were advised of initial thinking and invited to comment. The comments received supported the proposals and were forwarded to line management to strengthen the case for proceeding. DTI budgetary authorities were advised of proposals so that they could provisionally confirm the availability of funds. Their response set the 'ball park' figure for programme costs which was presented in the outline case to management. Permission to proceed was received in the form of a minute.

H.2.4 ROAME Development: Identification of Market Failure

The first step was to substantiate and define the market failures more accurately. Work involved closer examination of the previously identified sources, and research of the following additional sources of information:

- An internal paper prepared by ACOST Sub-Committee on Emerging Technologies,
- The PA report, (DTI, 1989) (see appendix G, on M90s)
- A Survey of UK manufacturing, largely of SMEs, conducted by AT Kearney (AT Kearney, 1989a).
- A paper on Manufacturing as a Competitive Weapon, (A T Kearney, 1989b).
- A report for the former Scottish Development Agency (SDA) on *The penetration of AMT into 100 companies, mostly SMEs*, (SDA, 1988).
- Interviews by the author with officials, SDA, senior consultants in large consultancies, a scheme contractor, and in Germany with Professor Hans-Jurgen Warnecker, then Managing Director of the Institute for Industrial Manufacturing and Management, University of Stuttgart.

H.2.4.1 SMEs failing to realise the benefits afforded by new technology.

An unpublished paper (held on file) prepared by the ACOST AMT Sub-Committee claimed that the rapid advances in manufacturing technology offered major opportunities for increased competitiveness. Further support came from the article "Britain's Best Factories" (Management Today, 1989, pp. 68-96) which looked at case studies of firms which had employed AMTs effectively. By way of reinforcing the significance of these benefits, the poor results of the General Motors (GM) Saturn project was quoted as an example which was given in Fleck's paper (Fleck, 1988). Fleck reported an overall reduction in productivity in the GM plant following the introduction of new technology.

H.2.4.2 Integration of Business Operations is Key

The wisdom of adopting a strategic approach in the implementation of AMT, in terms of the benefits which could accrue, was then argued. ACOST (1991, pp. 11- 13) had referred to the importance of new technologies being fully integrated into a company's strategic plan, if their application was to be effective. The paper stressed the need for a wider definition of AMT to be taken, in which management techniques such as MRP and JIT are also treated as technologies, with all of them implemented within an integrated framework for the whole enterprise.

ACOST's findings were reinforced by Fleck's view that it is the effective use of technology which is important in achieving competitiveness. Effectiveness arises from the integration of all components within and associated with the manufacturing process. Fleck attributed falls in productivity to technologies being installed on an application by application basis (bottom up approach), without taking account of the inter-operational requirements between component systems. Fleck also presented the case for information integration, so that the system components act as a cohesive whole.

A T Kearney (1989a, 1989b) also saw integration as a key element in the path to success, so supporting Fleck's arguments. DTI quoted A T Kearney's reference to integration as being much more than a manufacturing concern. For AMT to be successful, factory automation needs involvement and an understanding of other areas, such as market requirements. Officials concluded that 'integration' should be a key feature in the design of MPI.

To discover the topics likely to be important to SMEs in holistic planning, officials turned to the first version of the PA report (PA, 1989). This drew attention to the importance of companies adopting strategies which promoted flexibility in what they produced, and which could respond quickly to market changes, thereby achieving competitiveness (pp. 126-128).

In support for the holistic approach, DTI commissioned the Production Engineering Research Association (PERA), to research six of their AMT consultancy cases (PERA, 1990). PERA compared three projects which had failed through the firms not adopting a strategic approach with three others where the use of AMT had been planned in the context of the whole business. The evidence was clear: success stemmed from adopting a strategic approach.

H.2.4.3 Ineffectiveness due to failure to employ AMT strategically to achieve system integration.

The survey conducted by AT Kearney on the status of AMT in UK Industry found high use of AMT, but integration of the component systems (e.g. CAD, and MRPII), to be limited. AMT had been introduced on a largely piecemeal basis. A bottom up approach had been adopted, treating problems as isolated technical solutions, with no integration with management.

The report commissioned by the SDA confirmed AT Kearney's findings, recording little integration of AMT implementations (SDA, 1988, pp. 5, 6). SDA also stated "*Overall firms have not achieved the cost, efficiency, and flexibility benefits they expected ...*" (p. 16). It concluded that whilst the penetration of AMT was high, the technology was not being implemented for competitive advantage, that is, strategically (p. 6).

H.2.4.4 Failure to adopt a holistic approach to implementing AMT due to not understanding a complex subject.

Officials needed evidence to demonstrate the barriers preventing firms from adopting a strategic approach to planning their use of AMT. The SDA report was cited: managers of AMT projects were generally recruited from 'technician' grade staff, who were inadequately skilled to resource strategic projects. SDA reported a lack of the necessary training in the firms surveyed, highlighting low investment in management training in AMT and manufacturing strategy. The report found companies consequently frequently lacked the vision to become industry leaders in their market sectors.

A face to face interview was conducted with SDA as part of the task of developing the rationale for MPI). SDA confirmed the findings of their AMT study from their staff's direct involvement with Scottish SMEs. Interviews with leading consultancy organisations further substantiated these conclusions. (SDA also said that SMEs were generally unaware of their needs. Many larger companies still operated in a compartmentalised way, with departments working in isolation. Consequently their new graduates, being a minority, become embroiled in the existing culture. When they move on to work for an SME, they take this isolation culture with them, so maintaining the status quo.)

Fleck argued that the rules of planning and implementation were complex and not understood. Discussions with large consultancies confirmed Fleck's views and the inability of firms to plan holistically.

Officials now had the weight of evidence from which to conclude that most SMEs were unlikely to possess the multi-disciplinary skills to resource projects for the strategic implementation of new technologies: a market problem.

H.2.4.5 Additional Areas of Market Inhibition

Non Availability of Tools: The internal Manufacturing Management study found the supply of 'self help' packages in the holistic application of AMT to be inadequate. Fleck's observation (Fleck,

1988) that research was needed to identify best practice in strategic planning and implementation lent weight to this finding.

Shortage of Supply in the Market-place: Colleagues in the EI Division, were asked about the skill profiles of the listed consultancies. EI Division told the then Manufacturing Technology Division (MTD) that their projects were largely narrowly confined to specific areas of a business, such as design and quality. Whilst the number of listed organisations was large, the experience of each one was limited in scope. MTD also interviewed several of the larger consultancy organisations, who suggested that although they were now beginning to work on the strategic planning of AMT for clients, they themselves were still on a 'learning curve'.

Discussion with large consultancies led MTD to believe that wide experience was limited to about six larger companies, insufficient to meet the potential demand. Furthermore, even in these organisations, staff were also still on a learning curve as the holistic approach was relatively new. These consultancies targeted their services at companies larger than SMEs, because they were better able to fund the project costs involved.

Lack of Suitable Training Packages - MTD was aware of a lack of training packages to help people gain the necessary skills in holistic planning. Its view was later confirmed in a study by the Engineering Training Authority, jointly sponsored by DTI and the Employment Department.

H.2.4.6 The rewards of appropriate use of technology provide good reason to find ways to help SMEs

"Britain's Best Factories" (Management Today, 1989) had included case studies demonstrating the substantial benefits which could accrue through the strategic use of AMT. During an interview, Herrn Professor Warnecker provided evidence of the benefits enjoyed by German companies through good integration. He shared DTI's view that a holistic approach to planning is the key to competitiveness.

Officials had collected substantial evidence of the fundamental importance of firms adopting a holistic approach in the use of AMT. Few SMEs were doing so, an important reason for their lack of competitiveness. Lack of multi-disciplinary skills was the main reason for failing to use technology effectively. This was a primary market failure. The commercial benefits of appropriate implementation were demonstrable, providing the rationale for DTI to act to help firms.

Research showed that market failure was not confined to the SMEs, but also applied on the supply side of the market. This needed to be addressed if firms were to receive the range of services they needed to undertake strategic projects. Officials therefore concluded that MPI should not restrict assistance to SMEs, but should aim to advance competence in the implementation of new technologies throughout the AMT market, to extend the benefits of the programme beyond the participants.

H.3 Developing the Delivery Strategy

The internal Manufacturing Management (MAM, 1988) study found that senior management in SMEs were unlikely to commit sufficient time to manage AMT projects fully. Coupled with a general lack of the required skills, MTD concluded that firms would need to augment their resources by hiring external advisors. Evaluation reports for the previous AMT Consultancy scheme and CI, showed such an approach was effective. MTD adopted the same proven strategy of encouraging the use of advisors by awarding financial grants. How the delivery strategy was developed to address perceived problems is now discussed.

H.3.1 Barriers to Commitment to Strategic Planning

During interviews with consultancies, MTD was told that the complexity of the planning and implementation tasks required staff at senior consultant level. Early experience suggested that a project fee of £100K typically covered the cost of planning and the initial stage of implementation. The consultancy staff interviewed thought that such a high level of costs would deter SME managers from committing to strategic projects. Experience of the former AMT Studies scheme and operation of the Consultancy Initiatives supported the argument. Furthermore, companies were faced with a high level of risk, because the methodologies and procedures for the strategic planning and implementation had not been adequately researched. The combination of cost and risk was judged likely to deter firms from adopting a strategic approach.

These barriers provided officials with the 'Additionality' case for MPI. Without financial support, SMEs would not commit resources to plan holistically.

H.3.2 Selection of Delivery Mechanisms

H.3.2.1 Overcoming the Barriers to Use of Consultants

Central to the operation of MPI was encouragement of SMEs to hire external advisors to help with their strategic projects. MPI used grant funding to reduce the barrier of cost and risk which prevented SMEs from committing the necessary resources.

H.3.2.2 Lack of Consultancy Service Provision

The marketing opportunity represented by the scheme grants was used to motivate smaller consultancies and academic departments to form advisor consortia having the collective expertise to resource holistic project work.

H.3.2.3 Raising AMT Competencies - Within MPI Companies

Officials wanted supported firms to be left with a lasting ability to plan holistically. Where appropriate, advisors provided on site training to meet identified deficiencies. More important was the insistence that a 'hand in glove' relationship must be built between SME project staff and the members of their advisor teams. Knowledge was transferred from the individual consultants to the SME staff through mutually shared experience.

H.3.2.4 Raising AMT Competencies - Within MPI Advisor Organisations

Similarly close working relationships allowed transfer of knowledge from company staff to their advisors. Fleck had argued the case for the contribution made by firms in helping advisors understand the art of strategic planning (see also below).

H.3.2.5 Raising AMT Competencies - The Wider AMT Community

Holistic planning needed research. Fleck had argued that the rules were complex and not understood. He suggested the factory should become a laboratory where best practice approaches in

planning and implementation would emerge through experiment. He emphasised the important role of manufacturing staff in the experimentation process, with their experience providing a valuable contribution towards good practice methodologies. Fleck's observations gave rise to analytical co-ordination within MPI, which was carried out by the London Business School (LBS) under Professor Hill.

The objective of Analytical Co-ordination, (or Technical Tracking as it later became known) was to ensure that the 'good practice' lessons learnt through experiment within the MPI projects were formally recorded. This would enable DTI to extend the benefit beyond those directly involved in the programme, using dissemination activities like those of M90s.

The team from LBS first monitored work within the programme on a project by project basis, to identify those planning and implementation mechanisms which contribute to success or failure. The team then reviewed each mechanism looking across the whole programme for instances of repeated application and its correlation with consistency of performance. By comparing results across projects in this way, a set of best practice approaches to the application of AMT would be compiled.

The LBS team also tracked project work, developing two other sets of data. Team members recorded and identified potential areas for research, where solutions in the form of commercially available products do not exist. They also compiled statistics about the training recommended by the advisers, with information to be eventually fed back to the training providers.

Analytical co-ordination was also designed to identify case studies of worthwhile demonstration projects. These would form the 'seed corn' of best practice messages, upon which new awareness activities could be founded. It was also expected that the results of MPI would feed into university courses, by the members of the LBS team talking to their colleagues and via findings published in academic journals. The author is able to confirm that a number of such articles were published.

A further role of the LBS team was to feed back the findings of auditing projects to the project teams in firms embarking on an MPI project. This feedback acted as a sweetener to encourage later firms to be receptive to auditing of their projects, as they would learn from the experience of others and thereby enhance the value of their own work.

H.3.2.6 Lack of Self Help Tools

It was expected that the lack of tools to aid the planning process might be alleviated in two ways. Firstly it was hoped that new products would emerge as members of the Tracking Team advised others of the good practice methodologies discovered. Secondly it was intended that the case study information could form the basis of 'self help' packages.

H.3.2.7 Lack of Awareness in SMEs of the Need for Holistic Planning

Feedback from M90s events showed a lack of awareness amongst SMEs of the need for holistic planning. Firms targeted by MPI would have to be educated about its advantages. This would be best done by professionals within advisor organisations, talking to board members on a one-to-one basis. The potential for firms to receive grants represented a marketing opportunity for advisors. This feature was successfully used to motivate advisor organisations to employ their experts in a sales role, so helping to market the scheme and securing agreement by SME boards to commit to strategic planning (see also appendix K, section K.3.5).

H.3.2.8 Targeting of MPI

MPI was targeted at SMEs employing between 100 and 500 staff, (ROAME, 1990, paragraph 2.10). The upper figure was set by the European Union (EU) and government policy, which defined an SME as a company employing up to 500 people. The lower figure was arrived at from the PA Report and interviews with consultants. PA (1989, pp. 126-128) drew attention to the need for firms to reorganise to adapt to the market. Consultants affirmed this and said that companies faced serious difficulties in responding to the market drivers because of poor communication within their departmental structures.

This served further to reinforce the rationale for good integration: firms needed to achieve better integration of their business systems. DTI was advised that only the larger SMEs, employing more than 80 staff, would be likely to have formal structures and be able to benefit significantly from MPI. Thus 80 staff was set as the lower limit for eligibility.

While writing the ROAME (ROAME, 1990) officials accepted that some firms employing less than 80 people might benefit from an MPI project (paragraph 2.10). And so it turned out, with a several firms with 50 to 100 staff managing successful projects.

Officials were also anxious to avoid conflict in the 'market' with the Consultancy Initiatives, and especially the Manufacturing Initiative. Differences in operational characteristics differentiated the two programmes. CI programmes offered support for consultancy in specific areas of business planning, like Design and Quality. By contrast MPI encouraged firms to take a holistic approach to planning, and all aspects of running a business can be examined under the scheme.

Secondly, the Manufacturing Initiative statistics (held by PERA) which detail the take up of grants according to company size, revealed that companies employing more than 100 staff represented only a small proportion of all applications.

Colleagues in EI Division suggested that the lower level of participation by larger SMEs arose from the upper limit of 15 man-days consultancy. It was argued that this was sufficient for smaller firms, but in larger firms a substantial proportion of the 15 days would be spent by consultants in 'getting to know and understand' the firms operational environment. This left too little time for analysing problems and developing recommendations, and was not perceived by larger SMEs as representing value-for-money. Furthermore the 15 man-day limit made a holistic approach difficult, almost irrespective of company size. MPI overcame this situation by offering larger grants to support more consultancy man-days.

The role of Technical Tracking also differentiates MPI from CI. In CI the lack of tracking means that any new knowledge gained within supported projects remains with the applicant and his consultant. As previously described, the tracking mechanism within MPI allows a wider audience to benefit from the fruits of project work.

H.3.3 Setting Objectives

H.3.3.1 Number of Grants

The target number of projects to be funded under MPI was set at 175. The target partly reflected financial constraints, but sufficient projects were needed to provide meaningful analysis of their success. In setting the target, the BSO Report on the Census Production (BSO 1990), indicated that there were about 3,500 eligible SMEs in the target range. Officials thought it sensible to aim at the participation of 5% of these firms (175 firms), in the light of the following considerations:

- The previous AMT studies programme suggested an average rejection/withdrawal rate of about 25% would be likely for MPI (NEL, 1992, pp. 6, 13). Hence around 235 applications would be needed to achieve 175 grants. Experience from elsewhere, for example in operating the previous advisory schemes and CI, suggested it would be unrealistic to expect a greater response.

- 175 projects would give a reasonable spread of projects across industry sectors and regions of the country, and provide a large enough sample for the results of Technical Tracking to be meaningful.

The budgetary authority within DTI had already agreed a figure of around £10M for the scheme. Administration and 'tracking' costs had been estimated as amounting to £1.85M, leaving some £8M for grant support. The £8M figure constrained officials from going above 175 projects, assuming a consultancy fee of around £100K, 50% funded.

H.3.3.2 Increase in Advisor Resources

The target of creating 30 advisor consortia was based on a consensus reached after discussions with colleagues and AMT practitioners. The figure of 30 consortia was achieved.

The estimate of six consultancies with the necessary expertise provided the starting point in setting targets. A five fold increase seemed reasonable to ensure the viability of the new consortia during the life of MPI and beyond. If projects were equally distributed, then each consortium could expect five projects, a sufficient business incentive to seed their formation. If, as was more likely, business was not equally distributed, each consortium was likely to receive a minimum of three projects. Three still represented a sufficiently good business opportunity to make it worthwhile for partners to invest in the necessary staff training.

H.3.3.3 Dissemination of the Lessons

It was intended to exploit the demonstrator effect in MPI, as a means of encouraging other firms to plan their implementations of AMT holistically. It was planned that a high proportion of the successful firms which received support, would agree to becoming demonstrator firms within the M90s Inside UK Enterprise (IUKE) programme. Only those firms whose projects were successful and merit worthy would be invtited to join the programme. A target of establishing 100 demonstration firms from the SMEs receiving support, was set.

To enable other 'spread of best practice' activities to be developed which could further disseminate the good practice captured in MPI, the analytical co-ordination team was required to prepare a report recording the best practice lessons that had been learned.

H.3.3.4 Objectives for the SME Participants.

Value for money considerations required market failures to be addressed. It was insufficient to measure success by the uptake of grants. A more accurate measure of performance was the level of demonstrable benefits accruing to applicants. The business metrics in Britain's Best Factories Survey (Management Today, 1989, pp. 68-96), were used as a benchmark in setting targets for improvement. Targets were set for items such as Work in Progress, Finished Goods Stocks, and On-time Delivery, and were defined in terms of the average achieved across the projects supported.

H.3.3.5 Project Features

To obtain support under MPI firms had to satisfy the DTI's standard set of Eligibility Criteria. The projects also had to help the SMEs overcome the difficulties perceived for this sector. The projects therefore had to display a number of characteristics associated with planning holistically. The evidence collected to define the market failures showed the actions firms must take to become 'world class'. These actions were listed in the ROAME statement (ROAME, 1990, annex i, paragraphs 7-9) as features to be included in eligible MPI projects, as follows:

- projects must encompass the whole business;
- projects must cover both planning and implementation of new technologies and management systems;
- firms must commit to provide the necessary training.

H.3.3.6 Administration of Funding within Projects

MPI projects were divided into two main phases, the first dealing with strategic planning, and the second covering the initial stage of implementation. The level of grant funding was 50% of the total fees levied by the advisors, up to a maximum of £50,000.

Of the total grant awarded, firms could use between £25K and £40K for the planning phase, with the rest allocated for implementation. The reason for splitting grants in this way was firstly to help firms overcome the difficulties encountered as they respond to planning recommendations, and secondly to motivate applicants to commit to implementation.

The logic behind having a fixed range for the planning grant, with the balance for implementation, was as follows. Smaller SMEs, falling in the lower part of the range of company size, were thought unlikely to incur sufficient fees during planning stage to qualify for the full £40K of funding. However, these firms were less likely to be able to resource implementation than their larger counterparts and so needed more assistance with implementation.

Strategic planning is known to be expensive and even for smaller firms in the target range, costs were unlikely to be less than £50K, and with a 50% grant this justified the lower limit of £25K. Applications for less than £25K suggested the SME had already undertaken substantial work, and hence no additionality existed, and so it was ineligible for support.

The administration of grant payments differed from those in the CI. Firms had to pay all the consultancy fees, and then submit a claim for payment. This avoided criticism that applicants might be supported beyond the permitted level of grant funding.

H.3.4 Prepare and Submit ROAME for Approval

As the official responsible for the introduction of MPI, the author is able to confirm that the sequence of approval for MPI was the presentation of draft proposals to the AMT Requirements Committee (AMTC), then submission of the formal case to the Individual Programmes Committee (IPC), and finally ministers. Evidence of proposals for MPI going before AMTC is also contained in 'the files'. Inspection of the file papers shows that MPI was presented to AMTC on 10 April 1990, where the proposals received the committee's endorsement. A minute dated 21 November 1990, introduces a paper to be presented to AMTC, detailing proposals for the role of the Analytical Co-ordinator. The minute records MPI having received ministerial approval. The minutes of the 4 December meeting of AMTC, record the committee's discussion of the Analytical Co-ordination role. It was noted that "*There had to be a degree of independence to avoid criticism of biased operators*". It was further suggested that DTI look "*at the Business Schools for an individual as opposed to an institution*". File papers further record the MPI ROAME being

submitted to the Treasury, and the scheme being notified to the European Commission under the State Aids Rules, (see chapter 6, section 6.4.5).

H.4 Making the Ground Fertile For Approval

Officials prepared the ground for obtaining approval for MPI in a number of ways. A contract was let to Edinburgh University to prepare a digest of the main points raised in Fleck's paper. This was passed to Mr. John Barber of DTI's former Economics Division, who was a prominent member of the IPC. The digest convinced him of the need to act and secured his support within IPC.

Secondly, officials circulated draft versions of the ROAME statement to other members of IPC for their comments, which were incorporated into the final draft. In this way officials built support for their proposals through involving members of IPC in the design process, giving them a sense of ownership. It also placed them in a position where it would be difficult not to lend their support in committee, as they would be seen to be arguing against themselves.

ACOST was advised of further deficiencies in the market-place and were passed outlined proposals to address the failures. This influenced the recommendations in ACOST's report, paving the way for ministerial backing, making it more difficult for IPC to reject the proposals.

In conversations the author was advised by Dr Draper, and Mr John Barber, a senior economist in DTI, that a tour of manufacturing SMEs was arranged for the Industry Minister concerned. During his visits to companies he learnt first hand of their problems. Dr Draper believed that his influence (the Industry Minister) was critical to the Secretary of State giving approval for the programme.

H.5 Programme Implementation

H.5.1 Administer Programme

Consultancy programmes involve the award of large numbers of grants, and the total expenditure over the life of a programme can be high. Officials therefore regard it as essential take steps to ensure good value for money. The arrangements made for administering MPI to ensure value are now discussed.

The ROAME objectives and project eligibility criteria were included in the Invitation to Tender specification for the appointment of the scheme contractor and in the scheme guidelines, so that the contractor would deliver the programme in accordance with the policy agreed by the IPC.

Organisation of MPI centred around the Scheme Contractor, SAC Hitec, and subsequently re-named Ricardo Hitec, who was appointed by Competitive Tender. The Scheme Contractor acted as the department's agent, responsible for the day to day operation and administration of the scheme. The main tasks included:

- appraisal of project proposals against the scheme's eligibility criteria;
- award of grants, monitoring the progress of project work, payment of claims;
- promotion of the scheme as described above;
- listing of Advisors;
- programme monitoring, including the overseeing of Technical Tracking.

In support of both appraising applications and project monitoring, Ricardo's staff undertook site visits to the applicant companies.

H.5.2 Listing of Advisors

To ensure success in project work and the achievement of programme aims, Ricardo were required to 'list' only advisors qualified to undertake strategic planning. Here officials were adopting best practice derived from the previous advisory schemes and CI. Applicants for listing had to submit papers on how they would approach strategic planning and implementation of AMT, and declare their team members. Teams likely to be suitable were then interviewed to confirm their understanding and hence their qualification to undertake work.

The term 'listed' was employed to describe programme advisors, because it does not imply a guarantee. 'Approved' might imply a government-backed quality of service guarantee from the advisors. If an SME did not receive an acceptable service, it might sue the department for damages..

H.5.3 Supervision of the Contractor's Work

H.5.3.1 Progress Reporting

The contractor had to keep expenditure within budget, and report progress to officials in monthly management meetings with the department. Ricardo also submitted quarterly management reports, together with a final end of scheme report recording their view of performance. Dissemination of the lessons being learnt was undertaken in workshop events for participating SMEs and consultants. Ricardo's quarterly reports on all scheme activities (including work undertaken on technical tracking) recorded the progress of the scheme including expenditure, spend profiles and projections. These allowed the performance of the programme to be monitored, and tuned in the light of experience. Quarterly progress meetings chaired by a senior official (Grade 5) were also held with the scheme contractor, to monitor expenditure and discuss performance.

H.5.3.2 Preparation of Scheme Guidelines

DTI produced and issued a set of scheme guidelines to guide Ricardo in the administration of MPI, and maintain government standards of administration and operation. The guidelines contained details such as the scheme Eligibility Criteria, programme objectives, and the types of projects to be funded. Ricardo used them to develop their operational procedures, and to assess the eligibility of programme participants. By their use of the guidelines, Ricardo's staff became effectively an extension of the DTI 'in-house' team.

H.5.3.3 MPI Review Board

The administration of MPI was overseen by an independent 'review board' which operated in an advisory capacity. The role of the panel was to arbitrate in marginal cases about the award of grants and the listing of advisors, and make recommendations in cases where consultants had to be forcibly delisted. The board monitored performance of the programme, and recommended changes in design. Members of the board were representatives from Industry, Consultancy, DTI and LBS, with Ricardo Hitec providing the secretariat.

From the department's point of view, the review board usefully protected officials and contractors staff from criticism arising from implementing the actions they recommended. Officials could argue they had acted on impartial well-informed advice.

It proved unnecessary for the Review Board to consider any cases of marginality or the delisting of organisations, but it did recommended minor changes to programme design which served to enhance its performance. For instance, it recommended that DTI relax a requirement for SMEs to use competitive tender to appoint advisors because many firms did not have the skills to use tendering effectively.

H.5.3.4 Administration of Individual Projects

In administering grant funding, the scheme contractor found that planning was so complex that this stage had to be sub-divided into the separate phases of definition and final planning. When submitting applications for funding, firms did not understand their problems well enough to plan for their real needs. The definition phase enabled the operation of the business and its markets to be fully researched, and the scope of the final planning phase appropriately defined.

H.5.4 Promote Programme

It was intended to launch MPI a few months after appointment of the scheme contractor, allowing him time to become ready to support the administration of the scheme. However, immediately following his appointment, the Opposition tabled a debate in the House of Commons, challenging the government's commitment to Industry. The Secretary of State (SoS), asked his officials to prepare the evidence for him to give the House to counter the Opposition's claim. Officials listed the current programmes for Industry and by way of reinforcement gave details of the forthcoming MPI programme. The SoS in presenting evidence of the governments' commitment to Industry in the debate announced the future introduction of the programme, and effectively launched the scheme.

A submission to the SoS (Peter Lilley) dated 18 February 1991, refers to the SoS agreeing to a formal launch of MPI (alongside the launch of the SME Technical Advisory Service). Attached to the covering minute of the submission were the press notice, the main points for his opening remarks, and a 'Question and Answer' briefing. The SoS is asked if he is 'content' with these. The press release gave the reasons for introducing the programme and outlined the operational details. Numerous articles appeared in trade journals (copies held on the MPI Launch File), which served to promote the programme. The launch took place at 4 p.m. on 19 February 1991. The press launch was successful in achieving wide press coverage.

The scheme contractor, Ricardo Hitec, was given the main responsibility for promoting MPI. Unlike EI, MPI had no budget allocated for a national advertising campaign. Not only were funds inadequate for expensive advertising, but it was not the best way to communicate MPI's message to SMEs. Promotional activities were aimed at two sections of the community, the target SMEs and the advisors. Ricardo produced a four-colour brochure explaining the aims of MPI, the need for firms to adopt a strategic approach to business planning, and provided details of the support available.

The brochure was circulated to target firms, with a covering letter inviting applications. Firms were identified by asking a publications house for a mailing list of firms meeting the MPI eligibility criteria. The brochure contained a tear off form, which recipients were invited to complete and return to express interest. The form requested only basic details, such as the general line of business and company size. The MPI team filtered out ineligible firms and sent the rest a full application form with guidance notes for completion.

The two stage approach allowed firms to complete a simple initial form, increasing the chance of them coming forward. The main application form asked for detailed information about the applicant companies, which captured the current status of their business activities, and the board's

vision for the future. This allowed the 'technical tracking' to compare the 'before and after' situation.

Consultancy and other advisor organisations were also informed of programme details including the need for advisor listing, and invited to participate in the scheme. Organisations were identified by DTI staff and Ricardo's from their own knowledge of their market. Ricardo and DTI both secured further exposure for the programme by encouraging relevant trade journals to print articles about the scheme. Ricardo, in collaboration with DTI's Regional Offices, organised promotional seminars to which consultants and target firms were invited. The seminars brought advisor organisations into direct contact with potential business in a non-threatening way. To underpin these promotional activities, Ricardo provided a help line to answer questions from SMEs and advisor organisations: this encouraged firms to return expression of interest forms and provided CEOs with help to complete their formal applications. The consultants themselves also helped promote MPI, motivated by the market opportunities created by the programme (see also appendix F, section F.9, which provides a similar example). PA Consulting, for example, mounted a promotional seminar for potential clients. Other consultancies informed their eligible clients of the support available under MPI, as part of their routine contacts with firms.

H.5.5 Close Programme

When MPI was launched, no public announcement was made about when the programme would close. Officials expected that by the end of the programme, sufficient cases would have been completed (displaying technical diversity) to present a strong case to ministers for an extension. This prediction was based on the take-up profiles of existing grant programmes. The initial low take-up rate, due mainly to the recession, weakened the case for extension. In the event, however, extension was precluded by changes in government policy. An arranged Written Parliamentary Question gave notice of closure, (see chapter 7, section 7.8).

H.6 Evaluation Strategy

At the time of writing this thesis, the drafting of the MPI evaluation report had not been completed. The author was however able to study a draft version (DTI, 1997a, pp. 3-4) prepared by DTI's Assessment Unit which recorded the evaluation strategy.

The evaluation method involved face to face interviews with the scheme contractor, the DTI programme manger (the author), the analytical co-ordinator (Professor Hill), assisted companies and programme consultants. A postal survey was conducted with questionnaires sent to all of the firms receiving support. In total 22 face to face interviews were conducted with applicants, and 104 postal questionnaires sent out and 47 replies received. The final analytical Co-ordination report, prepared by Professor Hill (Hill, 1996a), was also employed as a source of evidence.

APPENDIX I

ANALYSIS OF EXISTING GUIDANCE AND RECOMMENDATIONS

APPENDIX I ANALYSIS OF EXISTING GUIDANCE AND RECOMMENDATIONS

I.1 Introduction

This appendix describes the work undertaken to identify areas where the *Innovation Budget Guidelines* are inadequate, in providing guidance to officials engaged in the design and implementation of support programmes. The approach adopted was to look at the support provided by the Guidelines, in each of the areas identified in chapter 8, section 8.10, and using the process model built in chapters 5 to 8, determine where guidance was inadequate. Where the Guidelines were found to be deficient, recommendations for new, additional guidance were proposed.

Section 8.10 found the main stages of the process and their component parts to be as follows:

(i) Issue Identification (chapter 6)
- Conception and Validation of Programme Ideas (chapter 6, section 6.2)
- Develop Programme ROAME statements (chapter 6, section 6.3)
- ROAME Approval (chapter 6, section 6.4 and 6.5)

(ii) Programme Implementation (chapter 7)

(iii) Evaluation and Feedback (chapter 8)

The following text details the results of analysis in each of these areas, and the recommendations made.

I.2 Issue Identification

I.2.1 Constraints on the Process

Chapter 5 section 5.2 discussed the factors which constrain the design process. They included determinants such as the overarching UK and European Commission (EC) State Aids policies, Acts of Parliament, the conditions under which it is appropriate for government to intervene in the market, and the financial constraints. It was highlighted in section 5.2.7 how these factors act universally throughout the design process, but in the author's view it is during 'Issue Identification' where officials are called upon most often, to take account of these constraints. Guidance on each area of constraint is now discussed in the order raised in chapter 5, section 5.2.

EC State Aids - European policy on State Aids is well detailed. Guidance (DTI, 1999a, pp. 95-97) describes the conditions, which are set by the European Competition Directorate (DG IV), for how member states may fund project work in their territories. DTI (1999a) explains how the State Aids Rules apply "*to aid granted by the State through State resources*", p. 95. How this expression is interpreted by the European Court of Justice to include central, regional, or local government, or any body appointed to administer aid, is described.

The levels of funding allowed are detailed, the special funding rules applying in the EC 'assisted areas' are defined, and definition of a small and medium sized enterprise (SME) set out. Procedures to be adhered to for notifying the Commission of funding plans are summarised and the procedures for reporting the progress of programmes to the EC are detailed. The Commission's powers to halt aid and require the repayment of aid are also

described. That such actions can be extremely damaging to companies and governments alike, is emphasised by the Guidelines (DTI, 1999a, p. 97).

The information provided in the Guidelines is observed to be sufficiently comprehensive to allow officials to undertake design of support policy such that they are conformant with the EC's State Aids Rules. That all interventions must conform to State Aids rules implies that the guidance provided be also equally applicable to R & T and advisory schemes (see chapter 5, section 5.2.1). Modification of guidance is therefore considered unnecessary.

The UK Legislative Framework for Industrial Support - Chapter 5, section 5.2.2 described the role of Acts of Parliament. They were described as providing the legal authority for government departments to spend money (HMT, 1999, paragraphs 2.1.2-2.1.5), and thus their role fundamental.

However inspection of the *Innovation Budget Guidelines* shows that whilst earlier versions of the guidance (DTI, 1992, p. 11) refer to the Science and Technology Act, the recent versions (DTI, 1996a, 1999a) do not. This is viewed by the author as an important omission. The term 'guidelines' is deliberately employed rather than 'rules', the latter suggesting a rigid interpretation of a 'code of conduct'. To be effective officials must be left some room for manoeuvre in interpreting guidance to accommodate the requirements of new or complex situations. In the author's opinion, guidance can only be correctly interpreted in these circumstances if officials not only understand ministers' wishes, and the detail of the State Aids Rules, but also only if they are also familiar with the powers which have been bestowed on the Secretary of State for Trade and Industry, through the 'Acts'.

The DTI *Finance Handbook* (DTI, 1996b, chapter 5, annex 5.1) outlines the role of 'Acts' and lists those of relevance to DTI. However as previously mentioned, officials responsible for developing programmes make little reference to the 'Handbook' in seeking advice on preparing ROAMEs. The situation is not helped by the fact that the document is not widely distributed. Unlike the *Innovation Budget Guidelines* copies of the *Finance Handbook* are restricted to the management units of the directorates. Thus officials engaged in the design process must ask staff in the management units for access to the document.

Chapter 5, section 5.2.2, showed the principal acts employed as a legal basis for providing support to be both the Science and Technology and Industry Development Acts. Whilst the current version of the Guidelines (DTI, 1999a, pp. 2-31) advises officials that in preparing ROAMEs, they should consult the *Finance Handbook*, officials are not specifically referred to the section dealing with the Acts of Parliament.

Officials should be better apprised of the role of 'Acts'. In particular how the Science and Technology, and Industry Acts empower the Secretary of State to support businesses, should be incorporated into the proposed Design Handbook. Their relationship with what officials can and cannot fund would be explained.

UK Government Policy - Chapter 5, section 5.2.3 showed that government policy is usually set out in government white papers. The 1996 version of the Innovation Budget Guidelines (DTI, 1996a, p. 8) referred to three white papers which have set out the broad policy aims in the area of innovation support policy (HMSO, 1993, 1994a, 1995a). Inspection of the 1999 version of the guidelines (DTI, 1999a) reveals that whilst it sets out DTI's objectives to promote 'enterprise' and 'innovation' (pp. 7, 9), no reference is made to those government white papers which impact on programme development.

This omission is regarded as problematic. As described in section 5.2.3 it is important to continually remind officials of the government's priorities, such that interventions match policy requirements and proposals are thus more likely to be approved. White papers are the primary source of reference for statements describing government policy, and clear

advice needs to be added to guidance for officials to consult these documents to understand how programmes should be designed to be conformant with policy.

Conditions for Government Intervention - Chapter 5, section 5.2.4 had shown the advisory type of scheme not to be supported, with market failures in such programmes not listed and discussed. Sub-section 5.2.2.2 analysed and described a proposed list of market failure categories for advisory programmes.

Inspection of the *Innovation Budget Guidelines* shows them to provide a detailed description of the conditions which must be present for it to be considered appropriate for the government to intervene in the 'market'. These are discussed in chapter 5, section 5.2 and include the presence of market failure, additionality and the likelihood of securing VFM. What constitutes additionality and the factors which determine VFM, are well detailed in the guidelines.

For the former, additionality is clearly described as situations in which government intervention is necessary to bring about changes that would not otherwise have happened. Examples of additionality cases are given, such as the acceleration of project timescales. For the latter, VFM is explained as being present when total project expenditure, that is government support plus the private sector contribution, is outweighed by the expected benefits of programme work.

The additionality and the value for money arguments are applicable to the development of both R & T and Advisory programmes, as is indicated in the *Finance Handbook* (DTI, 1996b, section 9.3, paragraph 9.3.5, and section 4.1, paragraph 4.1.8 respectively). Thus for both types of programme, current guidance in the *Innovation Budget Guidelines* on these topics is regarded as adequate, and enhancement of guidance not required.

In the case of market failure, the *Innovation Budget Guidelines* provide a good definition of this condition, which is applicable to programmes generally. Market failure is defined as a circumstance where a defect exists in the working of market forces, or the functioning of the institutions which help the operation of firms (DTI, 1999a, p. 32). However the definition can be improved upon. Chapter 6 section 6.3.2 observed that what are described as market failures, are more accurately describable as 'inhibitors to firms taking action'. The author suggested that an alternative definition of market failure be adopted; that is, market failure is deemed to exist when firms face difficulties which they do not have the means to resolve, either because of a lack of resources within their organisation, or because the product or service they require is not available in the market place. It is proposed that this definition be adopted in guidance.

As discussed in chapter 5, section 5.2.4, the categories of market failure in R & T programmes are listed, and for each category an explanatory text is given which describes the nature of each type of failure in detail. Guidance therefore gives officials a clear picture of what conditions constitute market failure in R & T schemes.

However sub-section 5.2.4.2 identified a major deficiency in the *Innovation Budget Guidelines*, which helps prejudice its suitability for wider use. As discussed above the *Innovation Budget Guidelines* (DTI, 1999a, pp. 32-33, 91-94) list the categories of market failure in R & T programmes, but not those of advisory schemes. Sub-section 5.2.4.2 recorded the analysis of developing policy for advisory programmes, and proposed a list of categories of market failures for these schemes. It is proposed that these be listed and described in the new Design Handbook.

Ministerial Priorities - Chapter 5, section 5.2.5 discussed how regular interaction between senior officials and their ministers enables officials to stay abreast of what issues are important to them. Guidance makes no reference to this input to the design process, which although to many may appear an obvious phenomenon, may to newly appointed civil servants be less so. In reminding people of the need to bear ministers priorities in mind when designing programmes, it would be

helpful to recommend that they monitor the dialogue between ministers and officials to become aware of what those priorities are.

Finance - The financial issues surrounding the funding of programmes are well covered in the *Innovation Budget Guidelines*, and enhancement of the guidance given is not seen as being required. Inspection of the 1999 version (DTI, 1999a) shows the permitted levels of funding to be detailed (pp. 19-20), the components of project expenditure which can be regarded as eligible costs in calculating the level of grant clearly stated (e.g. salary costs, overheads, and purchasing of equipment), (pp. 118-126), and the approval path detailed, (pp. 43-48). Chapter 6, section 6.4 describes the approval process, and reveals the Innovation Guidelines to contain comprehensive guidance in this area.

Coverage of financially related matters in terms of an official developing a scheme is considered adequate for the design of both R & T and advisory programmes, as the advice given is generic and equally applicable to the two categories of intervention. This supposition is founded on two observations. Firstly, chapter 5, section 5.2.1 showed that any intervention must be conformant with EC State Aids policy. Thus the *Innovation Budget Guidelines* in setting out and interpreting EC policy do so for schemes generally. Secondly, section 5.2.6 showed the DTI *Finance Handbook* (DTI, 1996b, section 3.4) to describe the approval process, and inspection of the Innovation Guidelines (DTI, 1999a, pp. 43-48) reveals the guidance given to conform with that described in the *Finance Handbook*.

I.2.2 Conception and Validation of Ideas

Chapter 6, section 6.2 revealed that the stage of conceiving and validating ideas for schemes is not discussed in the *Innovation Budget Guidelines*. Conceiving ideas is important. The white paper, *Modernising government* Cabinet Office (1999, pp. 6-19) highlights the government's responsibility to renew Britain, making it better able to meet the challenges of the world economy. As part of meeting this remit, the Competitiveness White Paper on building the *Knowledge Driven Economy* (Stationery Office, 1998) emphasises the importance of the government's role in strengthening businesses (pp. 6, 9-13). The *Innovation Budget Guidelines* (DTI, 1999a, p. 10) takes up the theme, recognising the key part played by innovation in contributing to firms being competitive, and the role played by the Innovation Budget to help firms innovate. The *Innovation Budget Guidelines* state:

"*Innovation is central to competitiveness and success. In a world of rapid change, the pressure on firms to innovate, and the speed at which they must adapt and change, become ever greater. Change creates business opportunities as well as threats. Most of what firms do to survive and prosper consists of innovation in one form or another, so activities under the Innovation Budget have a central role to play in DTI's achievement of its main mission*",

DTI (1999a, p. 10).

However the Guidelines make no reference to the need for officials themselves to be 'innovative' in the policy design process. Officials have a responsibility to generate new ideas for programmes, in response to changes in the market drivers for companies. The white paper *Modernising government*, (Cabinet Office, 1999, pp. 6-7) speaks of the government's remit to develop the policies which businesses need. The Competitiveness White Paper (Stationery Office, 1998, p. 60) refers to the need for government to improve its performance by becoming more innovative.

It is suggested that officials attention should be drawn to the process of conceiving and validating ideas, as it is fundamental to officials in making timely responses to changing support requirements. The author thus recommends that the need for officials to track the market as a means of seeding new ideas, be included in the proposed Design Handbook, as a specific topic. Drawing on the knowledge recorded in chapter 6, section 6.2, guidance should describe how initial

thoughts are generated and then developed into outline proposals and validated to test their credibility.

I.2.3 Develop Programme ROAME Statements

As indicated in chapter 3, section 3.3.1, and chapter 6, section 6.3, the *Innovation Budget Guidelines* provide a detailed description of how ROAME statements should be constructed. The Guidelines summarise the reasons for producing ROAMEs, and advise that officials must show how plans are conformant with policy, and are responding to the priority issues. Guidance continues by informing officials that they must have the evidence which supports the presence of market failure, and the need for 'Additionality' is explained. How 'Monitoring' and 'Appraisal' strategies must also be included, along with plans for subsequent evaluation is also set out.

In comparing the process of developing ROAMEs as described in the *Innovation Budget Guidelines* with that experienced in practice, attention was focused on the tasks of building 'Rationale' and setting objectives. Chapter 6, section 6.3.5 had shown only outline plans for 'Appraisal', 'Monitoring', and 'Evaluation including Feedback' to be given in programme ROAME statements, and closer comparison of guidance with actual practice was undertaken when discussing 'Implementation' (see section I.3 below).

In the areas of developing 'Rationale' and 'Objective Setting', the 'Innovation' guidance was found to be comprehensive, but nevertheless some gaps in guidance were detected, and proposals for improvement are now developed.

Developing Rationale - Whilst the principal stages in preparing ROAMEs are well described, it was felt that the process of developing 'Rationale' could be better explained. Chapter 6, section 6.3.2, suggested the task comprises four, discrete steps as follows

- **Step 1:** Build Evidence of Market Problems
- **Step 2:** Identify the Factors Inhibiting Organisations from Adopting Good Practice
- **Step 3:** Developing the Delivery Strategy
- **Step 4:** Demonstrate the Value of Proposed Interventions

Inspection of the *Innovation Budget Guidelines* shows the above steps not to be specifically identified. To help officials understand and focus on the work which they must undertake, it is proposed that these steps be identified in guidance. For each step what is to be achieved should be explained, and the work to be undertaken detailed. Proposals for additional guidance to be provided in execution of each of these steps is now discussed.

Chapter 6, section 6.3.2 proposed that the first two steps are concerned with identifying cases of market failure. Further inspection of the *Innovation Budget Guidelines* revealed a deficiency in this area. The guidelines while describing well each category of market failure (in R & T programmes), advice on how the evidence confirming the presence of 'market defects' can be built up is incomplete. Officials are advised to consult with DTI's Sector Directorates (these directorates are responsible for promoting specific industrial sectors such as automotive and aerospace), and the Business Link Directorate, to obtain information on market trends. Such interrogation of colleagues knowledge was discussed in chapter 5 section 5.3.5 and chapter 6, sections 6.2.3 and 6.3.3.

The researching of market failure is a key activity in the design process. Chapter 6, section 6.2 showed how ideas for schemes, or the idea of continuing with an existing initiative, arise as a result of officials detecting instances of market failure. Chapter 5, section 5.3, chapter 6, sections 6.2.3 and 6.3.3, listed and discussed a number of sources of information which have been previously

consulted, in gathering evidence of market failure. Research also showed that these sources can often suggest strategies for the resolution of problems.

In order that officials develop well researched and therefore 'solid' cases for support, they must interrogate the broad range of information sources. The *Innovation Budget Guidelines* refers to 'Rationale' being based on "*a thorough analysis of the situation on the ground as it relates to the justification of the programme*", (DTI, 1999a, p. 33). Inspection of the Innovation Guidelines shows them to make no reference to how officials can interrogate a number of information sources to obtain the evidence they require, and this is seen as a significant gap in current guidance. Drawing on the findings of chapters 5 and 6, it is proposed that the sources of evidence available to officials and how they are accessed, be included in the *Handbook for Programme Design*. Some other problems 'came to light' in evaluating the support provided by guidance in identifying market failures as follows:

Step 1: Build Evidence of Market Problems

This stage is concerned with collecting the evidence of symptoms in the marketplace of SMEs being uncompetitive. Chapter 6, section 6.3.2 revealed that officials look for two groups of evidence. The first is associated with establishing symptoms of poor trading on the part of organisations, with the second concerned with identifying instances of organisations exhibiting poor business characteristics. The *Innovation Budget Guidelines* do not draw this distinction, and description of the two groups in the new guidance is suggested.

Examination of ROAME statements revealed that officials place some reliance on evidence presented in white papers, to substantiate a lack of competitiveness in firms. It is however viewed as better if officials were to be guided to place greater emphasis on interrogating the primary sources of reference, as described in chapter 5, section 5.3, and chapter 6, sections 6.2.3 and 6.3.3.

Step 2: Identify the Factors Inhibiting Organisations from Adopting Good Practice

As discussed in chapter 6, section 6.3.2, the work in this stage is concerned with identifying the underlying reasons why organisations are not adopting good business practice. The reasons constitute the conditions of market failure. As indicated in chapter 5, sub-section 5.2.4.1, market failures in R & T programmes are well described in the Innovation Guidelines. But as discussed in chapter 5, categories of market failure in advisory programmes are not detailed, and it is proposed that they be identified and described in the new guidance (see chapter 5, sub-section 5.2.4.1 for details).

Step 3: Developing the Delivery Strategy

As discussed in chapter 6, section 6.3.2, this step is concerned with choosing the delivery mechanisms to be employed to reduce the identified market failures. It was proposed that the process involves two stages of thinking. First there is the requirement to show how delivery strategies will function to encourage organisations to adopt best practice methodologies to address the identified problems. The author views this task as one of matching the delivery mechanisms to the identified market failures.

The 1999 edition of the *Innovation Budget Guidelines* states that officials must "*explain how the proposed activity will address and resolve the market failure identified ...*", (DTI, 1999a, p. 33). The Guidelines continue that ROAMEs must describe the delivery mechanisms which will be used. Guidance quotes as examples Business Links and Industrial Organisations, (p. 33). However the author would point out that these are not in themselves delivery mechanisms, rather they are bodies who execute mechanisms which help reduce problems. An example of a delivery mechanism the author argues, would be the issuing of grants to encourage organisations to undertake good practice.

The author suggests that the performance of officials could be enhanced if they were informed in the guidance, of which mechanisms can be employed to negate each category of market failure. Such

relationships should be identified first from analysing what delivery mechanisms have proved previously successful in reducing problems. Chapters 6, section 6.3.2 provided a few examples of delivery strategies previously employed by DTI. Further examples are exhibited in appendix K, which looks in more detail at good practice delivery strategies which have been adopted in previous schemes. It is argued that such information coupled with better guidance on how to determine market failure, would result in the introduction of programmes which, by their design, are more likely to meet the needs of firms. To avoid mistakes being repeated, the examples of poor practice identified in appendix K would also be given (Brooking, 1999, p. 5).

Chapter 6 section 6.3.2 secondly emphasised the importance of officials understanding how the best practice activities which they are encouraging organisations to adopt will in themselves lead to enhanced competitiveness. The need is not highlighted in current guidance, and is necessary in demonstrating that a proposed delivery strategy will ultimately lead to better economic performance. The author recommends that in the interests of helping demonstrate potential VFM, guidance advises officials to detail in ROAMEs the 'mechanics' of how interventions are expected to result in raised market performance.

Step 4: Demonstrate the Value of Proposed Interventions.

This final stage is concerned with estimating the likely impact of a programme, in terms of the estimated financial and other benefits. The aim is to ensure that the government's 'investment' in terms of a grants for example, will result in net gains which are well in excess of the 'pump priming' funding. Chapter 6, section 6.3.2 showed that this work is normally covered in setting out a programme's objectives, for which adequate guidance in R & T programmes is provided in the Innovation Budget Guidelines. The guidance is also thought to be sufficiently comprehensive to support officials developing cases for advisory schemes.

I.2.4 Programme Approval

As indicated in chapter 6, section 6.4, the Innovation Budget Guidelines DTI (1999a, pp. 43-48, 101), set out in detail the procedures for obtaining approval to introduce new programmes. The topics covered include a description of the systems for approving budget allocations, the role of the Individual Programmes Committees (IPCs), a typical timetable for submitting ROAMEs to an IPC, and the approval 'escalation' procedures, the level of escalation dependent on the amount of funding requested.

However inspection of the Innovation Guidelines shows them not to refer to the good practice of 'Making the Ground Fertile for Approval', as described in chapter 6, section 6.5. Section 6.5 discussed some of the mechanisms by which officials can help 'make the ground fertile' for the approval of schemes and it is recommended that details of actions which officials can take to help ensure the acceptance of proposals, be included in guidance towards increasing efficiency.

I.3 Programme Implementation

I.3.1 Appraisal

Chapter 7, section 7.2 discussed 'Appraisal', and showed the topic to be mainly concerned with the appraisal of project applications. Section 7.2 referred to the advice given in the *Innovation Budget Guidelines*, which focused on projects in R & T programmes. Guidance appears to cover the subject well and enhancement considered unnecessary, but understandably reference to project appraisal in advisory schemes is not made. In achieving comprehensive guidance for general application, these types of initiatives must be catered for.

Much of the guidance provided for R & T projects is applicable to consultancy projects (DTI, 1996b, section 9.3), particularly ensuring the availability of resources, and the presence of additionality. That these properties are also required to be present in consultancy projects needs to be explained in the new guidance.

However importantly, section 7.2 highlighted the differences in approach to project appraisal, between programmes for which R&D is the principal focus, and those which are consultancy based. For the former appraisal is normally undertaken by officials, whilst the latter may be delegated to contractors. Again guidance should advise officials of this difference in approach, explaining that the complexity of R & T projects often precludes the use of outside bodies.

I.3.2 Monitoring

Chapter 7, section 7.3 discussed 'Monitoring'. Sections 7.3.1 and 7.3.2 showed how monitoring comprises of two activities, firstly that of monitoring the overall progress of programmes, and secondly tracking the progress of individual projects within a programme. The former is always the responsibility of officials to undertake, but project monitoring can be undertaken by both officials or the staff employed by scheme contractors. It was again shown that who is able to undertake project monitoring is dependent on whether work is R&D focused, or advisory based. The complexity of the policy issues associated with R&D programmes dictates that officials normally carry out project monitoring, but this need is not conveyed in either the Innovation Budget or the Continuous Monitoring guidelines. It is recommended that in future guidance, this distinction be made and the reasons why explained.

The role of the *Continuous Monitoring Guidelines* (DTI, 1999b) was introduced in section 7.3.1 shows them to be reasonably comprehensive, but with some significant gaps. To begin with the monitoring guidelines state that they only apply to programmes funded under the Innovation Budget (p. 2), and as indicated in section 7.3.1 wording needs to reflect their applicability for advisory schemes.

Inspection of guidance on programme monitoring DTI (1999a, pp. 67-77, 1999b) reveals there to be significant room for improvement in the information given on the development of monitoring regimes. It was observed that in the *Continuous Monitoring Guidelines* there is no section which deals specifically with what mechanisms may be employed in monitoring. To gain such information the reader must pick his or her way through the case study examples given in the Continuous Monitoring Guidelines DTI (1999b, pp. 18-23). It is proposed that a section dedicated to describing monitoring strategies in both R & T and advisory programmes should be included in new guidance, with examples employed in both types of activity included.

I.3.3 General Administration

Financial Management - The *Innovation Budget Guidelines* DTI (1999a) provide comprehensive advice on the procedures which must be adopted, to make sure that the risks of public funds being misappropriated is minimised. They set out the procedures which must be adopted in the financial administration of programmes. Chapter 9 of the Guidelines (DTI, 1999a, pp. 67-77) sets out the monitoring, payment and management controls to be put in place in the administration of programmes within the Innovation Budget.

The author considers the level of guidance to be fully adequate in helping officials ensure that public funds are appropriated correctly. The author also judges the advice to be applicable to programmes and projects in general, being conformant with guidance contained in the *Finance Handbook*, and is hence not in the need of enhancement.

General Management - As described in chapter 7, a number of matters of administration are covered in the *Innovation Budget Guidelines*. Areas where the Innovation Budget Guidelines were found to be deficient are now discussed.

Chapter 7 section 7.6 discussed the process of competitive tendering, based on experience and the content of guidance (DTI, 1999a, pp. 61-66). Guidance is observed to be applicable to both project work funded on both R & T and advisory schemes. Whilst the guidance appears comprehensive, comparing the content of the *Innovation Budget Guidelines* with the process as identified in chapter 7 highlights several deficiencies. Guidance fails to advise officials that tenderers' proposals often form the basis of subsequent contracts. Therefore when writing ITTs, officials must make sure that clear guidance is given to tenderers such that their bids contain no proposals which have the potential to embarrass the Secretary of State. Chapter 7, section 7.6.1 highlighted that officials often quote ROAME objectives and programme eligibility criteria in ITT specifications, to help ensure policy conformance. Guidance should be enhanced accordingly.

Chapter 7, section 7.6.1 also showed officials to write non-prescriptive ITT specifications, which do not assume a preconceived approach. Being non-prescriptive it was argued, helps ensure VFM as tenderers must think through their proposals. It further allows them the freedom to be innovative in their proposals. This approach is not detailed in the Innovation Guidelines, and the need for tender specifications to be non prescriptive should be stated and explained in guidance.

I.3.4 Promoting and Closing Programmes

Chapter 7, sections 7.7 and 7.8 respectively, described the processes of promoting and closing schemes. Taking promotion first, inspection of the Innovation Budget guidelines (DTI, 1999a, pp. 12-14), show them to discuss the topic in the context of the Innovation Budget's objective to "*improve the innovation performance of the UK economy leading to a better productivity and quality of life*" (p. 12). To help meet this objective officials are advised that they should seek to promote cross-sectoral and cross directorate activities to share knowledge and ideas, and to avoid duplication of effort and avoid confusion. In this way, officials are told, the effectiveness of DTI's activities and the money the department spends, is increased. Guidance makes no reference to those promotional activities aimed specifically at raising the awareness among the target audiences, of the support which is being provided. This is regarded as a serious oversight, since in the former case enhancing the likelihood of participation by target audiences should help ensure VFM. In addition it is important that the public's expectancy of a programme's life is realistic. The government the author observes from discussion with colleagues, sees its role to 'pump prime' activities, only funding schemes while there is the presence of market failure, or it is politically acceptable (see chapter 6, section 6.1.1).

The requirement to formerly promote programmes and, at the time of their launch to pave the way for closure, should be added to guidance. Importantly the DTI *Finance Handbook* recognises the need for promoting departmental programmes, suggesting that civil servants consider official launches involving the appropriate minister (DTI, 1996b, section 9.1). Chapter 7, section 7.7 detailed a number of promotional activities, including a description of how the participation of ministers is handled, which have been used successfully in the past. These examples should be included in guidance.

Section 7.8 illustrates the importance of identifying the means by which programmes can be closed in ways such that ministers and their departments do not run the risk of being legally challenged over support being withdrawn. Such a contingency is not discussed in guidance. It is therefore proposed that officials be advised in the 'Handbook' on the need to officially notify the public of scheme closures, and that the mechanisms which they can employ should be described. These mechanisms are discussed in section 7.8.

I.4 Evaluation

The *Innovation Budget Guidelines* DTI (1999a, p. 42) restrict themselves to simply saying that officials should use ROAME Statements to set out the evaluation issues, and the evaluation timings. As discussed in chapter 8, section 8.2, for further guidance on evaluation officials are referred to supplementary guidelines, *Guidance on the Preparation of Evaluation Plans* (DTI, 1999c). The author observes the guidance on evaluation planning to be comprehensive and applicable to both R & T and advisory programmes. Action to further improve on the advice given is not judged to be necessary, but it is advised that a summary of the supplementary guidance be included the Design Handbook, together with cross-referencing between the two documents.

I.5 Process Map

Blosch (2000, pp. 13-14) highlights the importance of providing people with a map of the process in which they are engaged, to help inform them of its make up and scope. Inspection of successive versions of the Innovation Budget guidelines (DTI, 1988, 1996a, 1999a) reveals that they do not provide such a map. The 1987 version of guidance provides a flow chart for the now closed Support For Innovation (SFI) scheme (DTI, 1987). However the chart majors on the approval and payment process, identifying stages such as "Receipt and Processing of Application", "Appraisal Against Project Criteria", "Appraisal Report to Offer" – preparing appraisal reports showing how applications stand against the scheme criteria etcetera, and 'Monitoring'. In a similar vein, the 1992 guidelines provide a flow diagram illustrating the sequence of checks which officials must go through in developing supportable proposals. Among steps quoted are "Fit in with DTI Remit?", "Fit in with Divisional Priorities?", and "Budget Allocations Allow Commitment?". But neither of these examples represents a map which fully describes the extent of the design and administration process. It is therefore proposed that the flow chart described in figure 8.3 (see chapter 8, section 8.8), be presented in the proposed *Handbook for Programme Design and Operation*.

It is further proposed that guidance be restructured in the new 'Handbook'. For each stage of the design and administration process it is suggested that the tasks to be undertaken be described in dedicated sections, together with explanations of the reasons why (Marchand, 1998, p. 255), (see chapter 10, sub-section 10.5.7.2). Such data may be obtained through inspection of the analysis work recorded in chapters 5 to 8 inclusive. Blosch (2000, pp. 13-14), emphasises the need for people to be provided with the data which underpin the business processes. Chapter 5, section 5.3, chapter 6, sections 6.2.3, 6.3.3, and 6.3.6, chapter 7, section 7.9, and chapter 8, section 8.6, discussed the information 'inputs' to the design and administration process. It is recommended that the information thus identified as being required by the design and administration process, be placed in the new design handbook.

I.6 Process Drivers

Blosch (2000, p. 13) refers to the importance of identifying the events which drive a business process. Chapter 5, sections 5.2.3 and 5.2.5 refer to statements of policy being contained in government white papers, with policy also being expressed by ministers' personal priorities. Policy was viewed as representing a constraint on the design process, as unless programmes are conformant with policy they will not receive approval. However, it can be alternatively argued that such stimuli also act as inputs to the process, by informing officials of what they need to do. In this way policy statements represent directives. Indeed, examples of ministers asking officials to introduce schemes have been given in this thesis (see chapter 6, section 6.2.3.8). Examples of officials taking action as a result of policy statements in white papers are given in chapter 6, sections 6.2.3.9 and 6.3.3.5, and appendix D, section D.4, appendix E, section E.1, and appendix F,

section F.3. Chapter 6, section 6.2.1, showed how tracking the market for emerging problems acts as a driver for officials to develop programmes, as they are required to address new market failures by way of helping firms to remain competitive.

Given the importance of people having knowledge of the factors which drive the system of which they are part, it is proposed that the details of the three drivers be set out in the new handbook. Understanding of the drivers, their importance, and how they act on the design and administration process, is regarded as fundamental to officials being fully effective in the design and administration role. Therefore it is further recommended that this information be placed in the introductory pages of the new guidance.

APPENDIX J

ANALYSIS OF THE STRUCTURE OF PROGRAMME EVALUATION WITHIN DTI

APPENDIX J ANALYSIS OF THE STRUCTURE OF PROGRAMME EVALUATION WITHIN DTI

J.1 Introduction

The author was aware that steps had been taken to share best practice from evaluation. As discussed in chapter 8 section 8.3, DTI's Evaluation and Policy Improvement Committee (EPIC) has the role of overseeing evaluatory work, and as part of this remit to draw the broad lessons. However the author had reservations concerning the ability of current arrangements to lift out and disseminate best practice. For example in examining the policy process, he could not see any documentary evidence of reports being analysed to draw out the best practice lessons.

The author decided to examine the evaluation and feedback process more closely and conducted an interviewed Dr. Ray Lambert (Deputy Director and Economic Advisor: Technology and Innovations Policy, in DTI's Innovation Policy and Standards (IPS) Directorate) [Interview 18]. Dr. Lambert was able to provide useful insights relating to how the evaluatory process operates, and pinpoint issues concerning deficiencies.

J.2 Discussion of the Evaluation Process

Dr. Lambert suggests that there are problems in attempting to draw best practice lessons in programme operation by looking across evaluations. In part, he suggests, the problem is conceptual. It has to be shown that what has been learnt in the past is relevant to addressing 'present day' issues. Unfortunately circumstances change and new priorities emerge, which can alter the strategic relevance of evaluation findings. This situation is not helped by all evaluation reports being narrowly focused on specific programmes, and steps need to be taken to provide something which is more comprehensive.

Steps have been taken in the past to help provide better access to evaluation findings. A database of evaluation reports was previously set up, containing the summaries of the main findings of each report. Officials could look across these to see what had previously worked. In practice this was used by evaluators rather than the programme managers or budget holders, the people directly concerned with the development of delivery policy. The database has since fallen out of use.

There is a further problem in drawing conclusions on best practice by comparing evaluations. Difficulty arises from a lack of coherence in reporting, which in turn results from continual changes in policy, such that in the strategic sense, that is, in terms of meeting DTI's objectives, comparing like for like is made more difficult. There are also practical difficulties. People will instinctively argue the relevance of previous evaluations to current market situations.

However for Lambert the 'lack of relevance argument' is not credible, as much, he insists, can be learnt from what has been done before. But he suggests the proviso is that analysis is conducted from the perspective of identifying and addressing the fundamental economic issues, and seeing how, generically, the mechanisms function to address these issues. This approach allows interventions to be compared more independently of policy change, allowing regularities between programmes to be discovered, and best practice conclusions to be drawn.

There are, however, at present, yet other factors which mitigate against across the board comparisons. Delegation of responsibility for administering budgets down the chains of command has resulted in a structure in which the evaluation is 'distributed'. The evaluators are mostly working in particular policy areas within the line directorates, (plus the Assessment Unit (AU) in the IPS Directorate). The author notes here that Dr. Lambert's observations coincide with the structure detailed in the DTI *Finance Handbook* (DTI, 1996b, section 3.4, paragraphs 3.4.9 to

3.4.19). They thus have responsibility for evaluating the schemes in their particular area, and operate largely independently of each other. It is first observed that, overall, the current structure leaves the evaluation process largely uncoordinated, leaving people to do things in their different ways.

Additionally, there is a focus in delegating responsibility on the administration of budgets, which causes the evaluation process to be weighted towards informing budget management. This, Dr. Lambert observes, creates tensions between programme and budget managers over the differences in interpretation of evaluation findings. Budget holders will focus on the VFM related findings of evaluation. On the other hand programme managers will look more closely at the operational findings. In summary, determining best practice across DTI is difficult to achieve.

However Lambert was able to show a way forward. There is, he argues, a requirement to evaluate programme strategies in terms of their ability to meet departmental, policy objectives. Towards addressing the evaluation issues, he proposes moving towards a more centralised framework for evaluation, which would enable comparisons of programme performance across DTI, in terms of value for money or contribution towards departmental PSA objectives. Good knowledge management should be introduced as a way of overcoming the current 'silo mentality'. As a first step, evaluation staff in the separate units could be brought together into a single evaluation unit. The author concurs. By grouping the evaluators together the sharing of tacit knowledge may facilitated through adoption of a personalised approach, using mechanisms such as face to face dialogue and brainstorming sessions.

Lambert acknowledges that there are sound arguments for placing the evaluators within the individual directorates. They become more knowledgeable about the policy areas of their directorates, and are thus better qualified to make credible judgements on the effects of policy, as against staff placed centrally. However on balance, the author considers the balance in terms of benefit is weighted in favour of the centralised structure. An option Lambert suggests is for the unit to be housed in FRM Directorate. This would allow it to use the status of this directorate as DTI's ultimate controller of finance, to add clout to evaluation findings and recommendations. The Departmental Strategy Group (DSG) is thinking along these lines, but no plans were available at the time of interview.

The single evaluation unit, Lambert suggests, could look across past schemes and draw out the best practice lessons. These should then be recorded in the knowledge base. It is proposed that the good practice derived in appendix K, should form the basis of a good practice source of reference in the knowledge base. But in the process of identifying and recording good practice, there is a need to look forward as well as to the past. As part of Evaluation's role in informing policy, it is also necessary to research markets and industries to help inform the setting of policy objectives, and then see how to meet those objectives. The author again agrees, the world market place is highly dynamic (Butler Group, 1995; Cliffe, 1999, pp. 18-19) and is in constant, rapid change. He suggests that, once set up, the evaluation unit should not only 'publish' the best practice lessons from evaluation, but also provide information on how markets are developing to help steer officials in determining new areas of market failure. The author further recommends that such knowledge be made available through the proposed knowledge base.

Lambert referred to the requirement to draw lessons from the experiences of Other Government Departments (OGDs), which is set out among other things in the HM Treasury 'Green Book'. In relation to the wider picture however, DTI officials tend to work in their own well established tradition, tending to ignore what goes on elsewhere. The author notes that interaction between the Whitehall departments at the working level has been historically poor, although at the time of writing this thesis the situation was beginning to improve as part of the government's aim for policy making to involve joined up thinking (Cabinet Office, 1999, p. 6).

Nonetheless the author considers there to be value in making a more concerted effort to encourage knowledge sharing in the development and implementation of support policy, across Whitehall. It is suggested that the role be assigned to the government's Centre for Management and Policy

Studies, (Cabinet Office, 1999, pp. 20, 57) whose remit is to identify and spread best practice in policy making.

APPENDIX K

DISCUSSION OF BEST AND BAD PRACTICE IN POLICY DESIGN AND IMPLEMENTATION

APPENDIX K DISCUSSION OF BEST AND BAD PRACTICE IN POLICY DESIGN AND IMPLEMENTATION

K.1 Introduction

Chapters 5 to 8 described the development of the system model for the design process, and chapter 9 recorded the testing of the model, finding it to provide a credible description of what the task of designing programmes entails.

Using the knowledge gained in developing the model, chapter 10 then proposed a number of strategies for improving the process. In particular, section 10.4.2 introduced ideas for a new set of guidelines, *The Handbook for Programme Design and Operation*, and section 10.4.3 discussed deficiencies in current guidance, which could be made good in the design of this new manual. In this respect it was proposed that gaps in the current guidance be addressed by recording the practices adopted by officials in the respective areas, and including examples of good and bad practice in programme delivery (see sub-section 10.4.3.1). However the need to build confidence in the design model in terms of it being representative of good practice, was identified.

The purpose of this appendix is to evaluate the case study examples contained in Appendices D to H, to confirm the efficacy of the strategies adopted in their development and implementation. Conclusions on what mechanisms represent potential good and bad practice are also derived. Analysis of performance draws on experiences of the author, his colleagues, and the findings contained in DTI evaluation reports on, or of relevance to, the case study programmes.

K.2 General Lessons Learnt from Programme Operation

Below are listed some observations which came to light during the course of research.

K.2.1 Analysis of Project Requirements

When working on the SFI scheme, the author was informed of numerous instances where colleagues had visited firms who had previously received grant funding for the development of new products. It was often observed that projects had not proceeded beyond the prototype stage, and that the department's time and money had effectively been wasted, as well as that of the applicants. Investigations by officials revealed the problem to have principally occurred because firms had not undertaken research of the requirements before commencing project work, to establish what was wanted. As a result of this observation, the department subsequently insisted that firms in their applications, demonstrate that their proposals reflect market requirements.

K.2.2 Insistence on Definition Phases in Projects

In collaborative R&D programmes, it was often found that partners had insufficient understanding of the needs to define the research task adequately at the time of submitting proposals for support. As a result, objectives were not fully met. To address the problem a project

definition phase was introduced to scope the research task. Even then, officials still found it necessary to reappraise the project specifications with applicants about 9 months into the main phase of project work.

Experience of operating R&D programmes over the years has taught officials to insist on including definition phases in programmes, to be completed before starting the main project work [Interview 9]. To ensure effort is focused where it is most needed, project partners undertake technological and/or market research to define the scope of research and the project objectives.

K.2.3 Team Building

In R&D projects, long experience has taught officials in appraising applications to make sure that people from the organisations involved can work together, and know each other well. It has been found that personality clashes have previously caused serious disruptions in project work, and prejudiced the meeting of objectives. Also, officials had experienced poor management skills in applicant organisations, which had also prejudiced project work through lack of proper control. The appointment of a 'qualified' manager is now a condition of funding [Interview 9].

K.2.4 Help to Draft Proposals

Experience of working with a broad range of organisations showed that applicants often have difficulty in setting out their ideas on paper, and providing reasons why proposed work should be grant funded. A summary of the *Innovation Budget Guidelines* was therefore produced to help companies understand what issues they had to address. It was also realised that officials also needed to directly help applicants in drafting their proposals [Interview 9].

K.2.5 Dangers of Tapered Funding in Programmes

Study of the June 1992 edition of the Innovation Budget Guidelines (DTI, 1992, p. 8) shows use of the 'tapered funding' principle in the grant funding of projects. The Guidelines explain the rationale for tapered grant funding as helping to relieve situations where project participants experience excessive 'up-front' costs. The idea was that under these circumstances participants could for example receive support exceeding the normal 50% during the first year, and then in subsequent years receive lower levels of grant such that overall funding did not exceed one half. Tapered funding could also be applied in cases where the work became closer to the market, justifying lower levels of support as the risks reduced.

However experience shows that the rate of reduction in grant level over time must be chosen carefully. In an interview Dr. Ian Harrison, Deputy Director in DTI's Management Best Practice Directorate relayed his experience of setting up the Regional Technology Centres (RTCs); [Interview 17]. Here DTI tapered the funding over a period of three years. When the RTC initiative was being developed, officials were under management pressure to ensure that the department fully spent its financial allocations within the financial year, a consequence of the Treasury's Rules on 'Annuality'.

In consequence, grants to RTCs were front loaded, with 50% to be spent in the first year. The decision failed to take full account of the time and effort needed to set up and establish such information centres (finding accommodation, recruiting staff, building up networks of clients and providers etc.) and set up activities extended well into the second year. As a result, many were not fully operational during the first year, and could not use their allocation of funds. Annuality prevented carry over of residual funds into the following year. Year two funding was insufficient to support the outstanding work, and officials believe this was the reason for the subsequent closure of a number of Centres. Moreover most commercial payments are made in arrears, and projects tended to slip behind schedule preventing payment for work undertaken at the extreme end of the financial year.

When applying tapered funding, officials should therefore avoid excessive front loading which could cause the later stages of a programme to fail to meet its objectives.

K.2.6 Handling of DTI Funds by Scheme Contractors

For consultancy schemes, it was once normal practice for the department to advance grant money to the scheme contractors, from which they paid grant claims. DTI's Internal Audit criticised one Division for not requiring scheme contractors to hold the money advanced in a separate interest-bearing bank account. The Treasury requires that it should not lose as a result of advancing money, hence the requirement for the holding account, with the interest repaid to the Treasury at the end of the programme. Holding the money separately from the contractors day-to-day business account simplifies the task of calculating the money due, avoiding the confusion experienced in some Initiatives, where it was difficult to separate the interest earned on DTI money from that of the contractors. A nominated account also protects the department in the event of the financial failure of the contractor, and is good practice.

K.3 Analysis of the Case Studies

K.3.1 The Enterprise Initiative

The author is not aware of any evaluation undertaken of the EI promotional campaign. However as discussed in appendix D, the campaign appears to have been successful in promoting the up-take of DTI programmes. It may therefore be concluded that the mounting high profile campaigns is an effective mechanism for improving access to schemes.

K.3.2 Research and Technology Initiative

Appendix E discusses the Research and Technology (R & T) Initiative, and shows it to have comprised a number of component schemes. Below the performance of three examples are investigated, these being the General Industrial Collaborative Programme (GICP), the Small Firms

Merit For Award for Research and Technology (SMART), and Support for Products Under Research (SPUR) schemes.

K.3.2.1 General Industrial Collaborative Programme

GICPs aimed to encourage collaborative research projects that would in particular benefit SMEs, with the majority led by Research and Technology Organisations (RTOs).

Issue Identification:-

Rationale: Identifying Market Failure

The evaluation report *DTI Funded Research Projects At Research And Technology Organisations*, (DTI, 1996c) (45 pages in length) found the original programme rationale to be valid and the delivery strategy appropriate stating:

"*On the whole during the life of the GICP Programme the rationale for the programme and support for RTOs was valid and proved successful in addressing those market failures identified*",

(DTI, 1996c, p. 10)

The rationale (DTI, 1996c, pp. 9-10) centred around factors inhibiting SMEs undertaking R & D projects. Technological and financial risks, and lack of information on the potential benefits were cited as amongst the principal causes.

The evaluation report found DTI support to have directly and indirectly helped the RTOs to overcome these barriers to collaborative research in SMEs, (DTI, 1996c, pp. 9-12). The technical objectives of projects were substantially met, with 85% of projects quoted as meeting all of their stated objectives and tasks. Over 90% of the remainder were deemed to have met their task related objectives. Generally the rationale and support for the GICP programme was thus found to have been valid and had proved successful in addressing the identified market failures (pp. 10, 24).

Most of the projects had generated wider benefits (pp. 11-12, 23, 25). The RTOs were reported as having been able to pass on some of these to members and collaborators, and the majority of projects had resulted in unforeseen benefits such as new revenue streams being created, for example paid consultancy, and the development of new expertise within the RTOs. Additionality was high (pp. 13-14). Only 2% of projects were found to be non additional, with 33% found to display full additionality. The remainder displayed partial additionality, with new technologies reaching the market more quickly and research being more detailed. The level of innovation was described as reasonably high, particularly for the UK, with some RTOs feeling projects to have been 'world class' (pp. 14, 24).

The rationale was thus shown to be valid and objectives generally met, which suggests that the mechanisms employed by officials in determining market failure were effective. The following section discusses the performance of the approach deployed.

Identifying Market Failure:

Chapter 6, sub-sections 6.2.3.4 and 6.3.3.2 illustrated the principal sources of information interrogated by officials in determining market failure, and how such evidence is then used to build a rationale for intervention. RTOs were among bodies listed as being as good sources of 'intelligence'. Inspection of the RTO evaluation report (DTI, 1996c, pp. 8-9, 24) indicated that they are well informed sources of information. The report refers to RTOs having knowledge of their sectors, which helps ensure that R&D reflects market and industrial needs. Given confirmation of a valid rationale, it is thus concluded that the mechanism of interrogating RTOs as an information source on market failure in R&D programmes is an effective one.

Objectives:

The RTO evaluation suggested that there was some evidence that the tight setting of objectives which had to be rigorously adhered to in project work had inhibited the full realisation of the potential benefits of research. Areas of benefit which could not been foreseen at the start of project work, had been identified as research progressed. New lines of potentially fruitful research could not be followed up because of the lack of flexibility inherent in the way objectives had been set. It is proposed that inflexibility in the setting and maintaining of objectives is potentially an instance of bad practice.

Programme Implementation:-

Delivery Strategy:

The RTO Evaluation Report (DTI, 1996c, p. 8) gives the programme objectives as:

(i) to promote co-operative and collaborative, pre-competitive research involving industrial SMEs, and,

(ii) to encourage technology transfer into industry sectors, particularly into small firms.

The principal mechanism deployed in GICP programmes was to use the resources available to RTOs to help promote R&D in these firms. The power of this mechanism to address the market failures is conveyed in the RTO Evaluation Report (DTI, 1996c, p. i, 9-10, 12-13, 24). The RTO report found the principal of funding RTO hosted, collaborative projects reduced the identified market failures. The mechanism was found to have overcome the barriers to collaboration such as suspicions over the motives of partners, disregard for the possible wider benefits, and to compensate for the technological and financial risks (pp. 7, 9, 12-14). As well as the effects of financial assistance, it was also noted that collaboration allowed the sharing of risk, reducing each participants' exposure.

SMEs it was felt were able to gain from the work of the RTOs, as they do not normally fund pre-competitive research (pp. 7, 9, 13-14). By using an RTO's services or through involvement in co-operative/collaborative work, SMEs are able to benefit from the supported R&D at a substantially reduced cost (pp. 9, 12-13, 16). SMEs are not required to 'tie up' capital in equipment purchases or floor space, and can instead offer in kind contributions which do not involve capital

expenditure. It was observed that such arrangements suited the RTOs and their clients well, (DTI, 1996c, pp. 12-13).

The evaluation report concluded "*It was clear that the GICP funding encouraged co-operative/collaborative research at RTOs*", (DTI, 1996c, p. i). Thus objective (i) above was met, and it may be concluded that the mechanism of employing RTOs to lead collaborative projects represents good practice. The programme evaluation report on support at RTOs confirms this view, referring to RTOs leading collaborative projects to be a valuable mechanism for furthering the competitiveness of SMEs (pp. i, 9-10, 24-25).

The report comments that *RTOs are geared to running collaborative projects*. RTOs, it is argued, have built up knowledge of collaborators who are well acquainted with work undertaken and its market potential. The ability to exploit this knowledge to help ensure that the results of collaboration are brought to market is valued. The evaluators comment that co-operative research leading to marketable products usually emanates from RTO membership, and this it was concluded could be seriously prejudiced without on-going government support for research programmes.

A number of unexpected, wider benefits were identified from employing RTOs as project co-ordinators, which serves to demonstrate the added value of adopting this delivery mechanism. The Report (DTI, 1996c, pp. 23-24) highlighted that the research projects had served to maintain the skills bases of the RTOs, including the development of new expertise. This had allowed the RTOs to ensure that company employees were kept aware of new technologies and were trained in their use (p. 15). This it was reported had allowed industry to stay ahead of the 'competition' (p. 24). A number of project participants had been encouraged to embark on 'spin off' projects from the DTI funded work, at their own expense (p. 24).

The RTOs had also been able to increase their portfolio of services (pp. 15, 23). New markets had been developed for the RTOs and a number of new projects for future funding had been identified. The evaluation report also observed that the promise of DTI funding at the initial stages of putting project proposals together "*added an extra level of credibility to the projects that attracted prospective collaborators*" (DTI, 1996c, p. 14).

These observations together with the report's (DTI, 1996c) reference above to all market failures being addressed, shows that objective (ii) was also met. Thus it was also concluded that the use of RTOs to aid technology transfer represents good practice.

Underpinning the operation of GICP, is the principle of the government providing financial grants by way of overcoming firms inhibitions to participate in collaborative research. That the application of this funding mechanism represents good practice, is implied in the "Conclusions" of the RTO evaluation report. In concluding the evaluators reported:

"*We feel that the funding of projects under the GICP has been valuable and successful initiative in enabling R&D to be undertaken at RTOs to benefit a wide range of industry. Co-operative projects were often speculative and benefited the whole membership of the RTO, collaborative research enabled companies to participate in R&D which they would have been unable to do otherwise*".

Importantly the Report continues:

"*It is unfortunate that this type of funding has ceased*",

(DTI, 1996c, p. 24).

Programme Administration:-

The monitoring of projects by officials was found to be unsatisfactory. Official files did not contain records of action taken following the quarterly, project review meetings. Little evidence was seen of officials feeding back their comments on the quarterly progress reports prepared by the RTOs. Many of the RTOs had reported that they would have found it constructive to have received feedback, and would have felt encouraged by it as it would have indicated that officials were taking a greater interest in their work (DTI, 1996c, pp. 20-21). This is an example of bad practice.

During the life of GICP there had been several policy changes, as signaled in successive whitepapers (see chapter 2, section 2.5.6). The report (DTI, 1996c, pp. 20, 25) concluded that officials had not informed RTOs of the impact of policy changes in a timely manner. As a direct result, considerable time had been wasted in drafting project proposals, which were then invalidated by policy changes.

Looking for a cause for the above problems, the evaluators (DTI, 1996c, pp. 20-21) found that following reorganisation of the sector divisions within DTI, project officers had inherited large numbers of projects moved across from officials elsewhere. This had resulted in them having excessive caseloads, which had seriously restricted their ability to adequately monitor project work. The author concurs, being aware of many of his colleagues complaining of the levels of case work which they had been given. A situation to be avoided in the future.

K.3.2.2 The SMART Scheme

Issue Identification:-

Rationale:

The 1991 SMART evaluation report (DTI, 1991b) (comprising 39 pages) covers the period from the launch of the pilot scheme in 1986 until the end of the second round in 1990. (The report was issued in January 1991 with the evaluatory work undertaken and completed in 1990). The report (DTI, 1991b, p. 3) highlighted the principal area of market failure on which the original rationale was based, as that of small firms having a disproportionate difficulty in raising capital for high technology projects. To address this problem, two principal aims for the scheme were set:

a) That the difficulty would be directly offset for some, the SMART winners,

b) That the majority of small, high technology firms will be helped by the presence of SMART in the market. Successful projects would help demonstrate the value of financing R&D in small firms and hence change the attitude of investors to providing capital to such high technology businesses.

The 1991 evaluation report (DTI 1991b, p. 4) supported the first of these arguments, finding a very high level of additionality. High additionality had been demonstrated by around 45% of the SMART winners reporting that they had failed in their attempts to obtain funding elsewhere, with many others

considering that it was not even worth trying. Programme additionality was considered further in the subsequent 1994 evaluation report (DTI, 1994a, p. 8), and is discussed in later in this section.

The second argument was seen as tenuous. The report (DTI, 1991b, p. 4) found there to be no evidence of SMART having influenced the attitudes of investors since its introduction. The evaluators had conducted face to face interviews with financiers, that is banks and venture capitalists, which found the impact of SMART to be minimal (pp. 34-35). Whilst there was general agreement on SMART being perceived as a positive factor by financiers when first considering investment proposals, the programme was not considered as replacing the stringent checks made by investors. These checks placed emphasis on the quality of the people involved and the marketing plans, rather than on the technical aspects focused on by SMART. The 1991 evaluation report concluded that given the "'*hard nosed' criteria that they* (the financiers) *adopt*" (DTI, 1991b, p. 35) it was unreasonable to expect SMART to influence their thinking. The objective was considered as unrealistic, and was dropped from January 1991 onwards, (DTI, 1991b, p. 23, 27, 1994a, p. 3; ROAME, 1991b, paragraphs 5-6).

The Innovation Budget Guidelines (DTI, 1992) in advising on setting objectives recommends officials "*be ambitious but realistic*", (p. 19). Clearly this advice was not followed. The author suggests that it would have been better practice to have discussed SMART's delivery strategy at the proposal stage, which may have provided an indication of the viability of setting this second target.

The 1994 evaluation report (DTI, 1994a), (comprising 29 pages) updates the earlier 1991 evaluation, covering the additional period of 1991 to 1994. It describes the rationale for extending SMART for a third phase as continuing to centre on the reluctance of venture capitalists to invest in R&D projects undertaken by small, high technology firms (pp. 3-4). Start-ups and other small firms are therefore starved of the finance they require to resource their proposed R&D projects.

Market Failure:

The SMART ROAME (ROAME, 1991b, paragraphs 4-7) identified two principal sources of market evidence, which informed the process of developing the programme rationale for extending SMART for a third phase. These were outside bodies, and importantly the results of the previous evaluation (DTI, 1991b). For the former, the ROAME shows how a letter received from the Bank of Scotland had confirmed the difficulty of firms raising small sums of money for equity investment. In the case of the latter, the earlier SMART evaluation (DTI, 1991b) had confirmed the continuing problems faced by small firms in raising finance.

The 1994 evaluation report (DTI, 1994a, pp. ii, 8) found additionality to be high at 85%. In keeping with the earlier evaluation, the report found many firms had been able to embark on high technology projects that otherwise they would not have been able to do. Thus, the author suggests, the market failure based around a lack of external finance was valid, and thus provides an example of the value of consulting previous evaluation reports and external sources of expertise in the field of interest, when gathering evidence of market imperfections.

SMART Aims and Objectives:-

The 1994 evaluation report (DTI, 1994a, pp. 3-7) continues by discussing the specific aims of the programme which were continued following the 1990 evaluatory work, and the scheme's performance in meeting these aims. These were concerned with measuring the contribution of

SMART in making good the lack of alternative finance, and thus stimulating R&D in small firms and start-ups. The findings of the report are now described.

Two primary aims were detailed:

a) "*To encourage and facilitate the formation of viable and durable science and technology based businesses*" (DTI, 1994a, p. 5).

The evaluators noted that 22% of firms in the sample were start-up companies, and many had reported their survival as owing to SMART. Only 5% had gone into liquidation. However it was felt too early to draw definite conclusions on SMART's ability to help the formation and enhance the probability of the continuing survival of firms. Many respondents across the whole sample had however reported that their SMART projects had contributed to other development programmes.

b) "*To stimulate small businesses to develop and market new science and technology based products*" (DTI, 1994a, p. 6).

This aim was seen to have been met. The evaluation report concluded that SMART had stimulated a consistently large number of applications, and that additionality was found to be high (DTI, 1994a, pp. ii, 6, 16, 8). Grant levels were considered to be generous in comparison with other programmes, but SMART had allowed many firms to proceed with development projects, which they would otherwise have not have been able to finance.

The specific targets set in SMART which would allow the performance of the scheme in meeting the broader aims to be gauged were listed as:

- "*To stimulate at least 25% more worthwhile ideas per year meriting a Stage I award than there are awards available*" (DTI, 1994a, p. 6).

SMART was over subscribed for each competition, but the evaluators felt no precise criteria had been set for assessment, and hence a figure for over subscription could not be accurately determined. The objective was considered as meaningless as there was no comparator or benchmark against which to make a judgement (p. 6).

- "*By the end of Stage II, to have caused at least 10% of Stage I winners in that competition to be viable small firms established or registered after winning*" (DTI, 1994a, p. 6).

The objective was easily met. Responses had indicated that in 22% of the SMART cases, the firms concerned would not have been able to launch themselves without an award.

- "*To stimulate at least one-third of Stage I winners to market a SMART derived product within three years of getting an award*" (DTI, 1994a, p. 6).

The target was seen as almost achieved. Thirty percent of Stage I winners had launched their products on to the market.

- "*To achieve ratings for 'value for money' and 'innovation' at least equal to those achieved in the 1990 evaluation and on the same basis*" (DTI, 1994a, p. 6).

It was felt that these targets could not be assessed via the postal questionnaires. It should have been possible to collect the necessary information via project monitoring, but the policy of avoiding the placing of burdens on small businesses, together with limited resources in DTI's Regional Offices (ROs) (who were responsible for administering SMART), proper monitoring was not possible. It was recommended that a more effective monitoring regime, involving continuous monitoring, be introduced (pp. 7, 15-16).

In concluding, the evaluation report (DTI, 1994a, pp. 16-17) found that whilst not all the original components of the rationale had been validated, partly because they were incorrectly founded (i.e. the ability to influence the attitudes of venture capitalists), SMART was nevertheless a valuable scheme, and should continue. However it was recommended that the target of "number of awards" be changed to one which allows judgement of results, that is measurement of impact. This latter comment serves to reinforce the need for officials, when setting objectives, to concentrate on parameters which allow a programmes effect on reducing perceived market failures to be directly measured.

SMART was viewed as achieving good value, the scheme having demonstrated high additionality. The evaluators calculated the ratio of grant to sales value of the mature projects to be 1:6. This was judged as reasonable given that in the SMART companies, the marketing and distribution infrastructures are typically less well established, (DTI, 1994a, p. 10).

Programme Implementation:-

Delivery Strategy:

The role of grants to encourage firms to take action is well demonstrated in SMART. Pivotal was the use of grant funding to help reduce the identified market failure of small firms being unable to go ahead with proposed R&D projects due to lack of investment capital. The efficacy of providing such support to single firms is indicated by the evaluation report's comments recorded above. SMART had been successful in contributing to the formation of viable high technology firms, (DTI, 1994a, p. 6). A reasonable proportion (22%) of winners had been start-ups. That 30% of SMART applicants had successfully launched new products further serves to indicate enhancement of the potential survival of firms. In some cases SMART awards had led to the development of other products, and thus helped build a basis for establishing small companies (DTI, 1994a, pp. 6, 8). It is therefore concluded that the grant mechanism is an effective means to seed the formation of firms, and to contribute to their longevity.

SMART also had stimulated many small firms to develop new products which they would not have otherwise started. The scheme's effectiveness in this area is witnessed by the high level of Stage I applications, and the high level of additionality experienced. Many firms had embarked on R&D projects which they would not have otherwise been able to do. In addition, as previously mentioned, 30% of Stage I applicants had launched products and it may be thus concluded that the grant mechanism had been successful in encouraging firms to embark on R&D work, triggering the development of new products. The author additionally observes that the over subscription of the scheme indicates the efficacy of having actively promoted the scheme through the media.

The objective of stimulating more ideas than grants available was seen as a poorly set objective, as no precise criteria had been specified (DTI, 1994a, p. 6). The Innovation Budget Guidelines (DTI, 1992, pp. 19-21) refers to the need for objectives to be testable whenever possible, and

presented in a form which is "*unambiguously verifiable*". Clearly best practice had not been followed. The need for officials to set quantifiable targets, if credible conclusions on programme performance are to be reached, is stressed.

The 1991 evaluation (DTI, 1991b, pp. 10-13) found SMART to be making a strong overall contribution, in terms of innovation, additionality, commercial returns, and employment indicators of expansion. The 1994 evaluation report found SMART to be providing valuable support to firms. The grant:sales ratio was estimated as 1:6, (DTI, 1994a, pp. 10, 17). Precise ratings for value for money and innovation could not be determined, as the necessary information had not been collected during the day to day administration of the scheme (pp. 7, 15). The DTI *Finance Handbook* (DTI, 1996b, section 4.1, paragraph 4.1.8) emphasises the importance of officials achieving good value in everything which they do, and hence the lack of continuous monitoring ran contrary to guidance and thus represented a bad practice.

SMART also displayed achievement of wider benefits (DTI, 1994a, p. 7). Credibility, prestige and company profile were cited as among benefits accruing to scheme winners. Within the individual companies, increased technological knowledge and expertise in the teams along with greater commitment among people were also observed. The author argues that the grant mechanism is effective in increasing company viability, by acting to increase knowledge and securing peoples' commitment to project work.

For the government it was noted that the competitions provided an excellent opportunity to publicise the importance of firms undertaking R&D. It was also found that 52% of actual and estimated sales of the mature products represented export business. The author hence suggests that the competition approach to identifying projects represents a useful mechanism for promoting the wider aspects of the government's work.

Colleagues have advised the author how in the past, banks have made offers of loans to firms applying for DTI funding, conditional on them receiving their DTI grant. Previously banks have not had the expertise to judge the commercial merits of R&D proposals, and effectively relied on the appraisal of projects by officials to judge the quality of plans. The evaluators observed a similar phenomenon operating in SMART, reporting that SMART had been successful in levering support from banks in the form of secured loans, and noted how bank support had usually depended on the receipt of a DTI grant (DTI, 1994a, p. 4). Therefore it may be concluded that the promise of grant funding also represents a mechanism for levering funds from banks.

Administration Procedures:-

The SMART evaluation report (DTI, 1994a, pp. 14-15) draws attention to the administrative problems which an annual competition creates for the DTI's 'agents'. People were reported as having difficulties dealing with the peaks in work load resulting from the call and application processing. It may therefore be concluded that holding annual competitions represents poor practice.

However the evaluators found the ROs placed high value on the publicity and prestige which they derived from the annual competitions. They suggested that one way around the problem would be to hold award ceremonies annually or biannually, but with individual proposals assessed continuously. The Support for Products Under research (SPUR) scheme (see sub-section K.3.2.3 below) was cited as an example of where continuous assessment had worked well (DTI, 1994a).

The author spoke to Mr. John Papworth in DTI's SME and Technology (SMET) Directorate, who has responsibility for the operation of SMART. Mr. Papworth informed the author that the report's recommendations had been accepted in principle and acted upon, but instead it was decided to allow the 'Regions' to invite proposals on a monthly basis rather than annually or biannually. The latter is judged as better practice.

It was noted above that administration of grants did not include the monitoring of projects against specific objectives (DTI, 1994a, p. 15, 17, 201-22). Two reasons were cited. The first was put down to limited resources which, the author observes, is compounded by the heavy burden of case work created by operating the competitions. Second was the policy of avoiding the placement of burdens on small firms. Both had restricted the ROs' ability to monitor and measure the success of their efforts to help businesses. Furthermore the ROs had been unable to aid firms in exploiting their developments. The evaluators felt that proper monitoring would have enabled valuable information relating to scheme performance to be fed back into the selection process, but also to identify post development support needs to have been quantified. Clearly senior managers need to ensure that the bad practice of overloading staff is avoided in any future reorganisations.

The SMART evaluation report (DTI, 1994a, pp. 20, 24) refers to the procedure of DTI Headquarters staff regularly checking the standards applied by the ROs in assessing the SMART proposals. It is suggested that this represents good practice, serving to ensure consistency in appraisal and guarding against proposals exhibiting good potential from being rejected.

K.3.2.3 Support for Products Under Research Scheme

Issue Identification:-

Rationale:

The market failures underpinning the programme rationale for the Support for Products Under Research (SPUR) scheme are described in the SPUR evaluation report (DTI, 1994b, pp. 3-4) (17 pages long), and may be summarised as follows:

Innovation - the importance of SMEs in innovation was cited, which in turn depends on them undertaking R&D.

Finance - SMEs face particular difficulty in obtaining finance to fund R&D projects. In consequence promising work is not undertaken, delayed, or restricted in scale. Thus left to market forces alone, R&D carried out by SMEs would be less than optimum to the detriment to the whole economy.

Risk - several components of risk were identified:

- SMEs lack the range and scale of business activities which would enable them to accommodate project losses.

- Financiers may be deterred from investing in R&D projects, because they lack the necessary information and expertise to evaluate the risks involved. This latter factor, the author argues,

is more appropriately placed under the heading of "Finance", as it contributes to the difficulty of firms raising capital from external sources.

The SPUR report also observed that participation in collaborative projects as funded in other parts of the Research and Technology Initiative, was difficult for small firms because the associated costs are high and due to their tendency of not wishing to share knowledge (DTI, 1994b, pp. 3-4).

Identification of Market Failures:

The reason for introducing SPUR was to 'plug the gap' left by the withdrawal in 1988 of the SFI scheme (DTI, 1994b, p. 4; ROAME 1990b, paragraphs 7-8, annex A)), which the author is able to confirm from his experience catered for both small and medium sized companies (DTI, 1987, section: "SFI OBJECTIVE AND RATIONALE", paragraphs 1-8, section "SFI GUIDELINES – SUMMARY", paragraphs 1-22). Following the demise of SFI a substantial drop in applications from firms was experienced, due to SMEs' reluctance to participate in collaborative projects, (ROAME, 1990b, paragraph 8). Colleagues informed the author that the financial inducement to join in collaborative projects was often insufficient to overcome their suspicions of the other partners, or the risks involved (ROAME, 1990b, paragraph 7). This experience confirmed a continuing market failure of firm's inhibitions towards collaborative R&D and, taking account of SMART which aims at the small firm, there was the need for single company funding geared towards the 'larger' SME (ROAME, 1990b, paragraphs 4-14). The scenario is an example of how lessons learned from programme operation may be employed as a mechanism to help identify the requirements for future schemes.

The SPUR evaluation report (DTI, 1994b, pp. 4-5) supports the preceding observations. It makes reference to the changes in R&D support which were introduced in the late 1980s (HMSO, 1988, pp. 33-37). These it argued, "*had an unforeseen and disproportionate effect on SMEs*", (DTI, 1994b, p. 4). Reference is made to the previous Support for Innovation (SFI) scheme, which had shown that significant benefits arose from supporting smaller firms. Additionality was considered more easily identifiable and higher with the SME projects, than in those supporting larger companies.

The SPUR evaluation report (DTI, 1994b) found the programme rationale to be valid, stating "*we found no evidence to undermine the rationale*", (DTI, 1994b, p. ii). Support for arguing the validity of the rationale could also be drawn from the high level of additionality which had been found to be present. In the majority of cases firms claimed that either their project would not have gone ahead or work had been accelerated. Of the firms which applied for funding but had failed to receive support, only a few were found to have gone ahead with their proposals.

The report continues by providing other evidence which supported the rationale, hence serving to indicate the credibility of the methods adopted originally to identify the market failures. The report found most firms had introduced or were planning to launch new products, and 63% (126) of the successful applicants had expanded their R&D capability as a result of SPUR funding (p. 4). Thus the overall aim of the scheme to encourage more firms to embark on R&D projects was satisfied (p. 9).

Difficulty in raising finance for projects was found (DTI, 1994b, pp. 5-6). Firms were questioned during the evaluation over the raising of money to fund R&D work. Great difficulty had been experienced in securing funds for R&D projects. SMEs had reported that the levels of finance they required were either too small to interest venture capital companies, or too much equity was

required from them as surety. Another problem quoted by applicants was a fear of high technology investment, and of bankers not understanding technology [Interview 9].

Risk had also been identified as a factor inhibiting firms to undertake R&D. When questioned some applicants said whilst they had available funds, they considered the risk associated with their projects as too high to proceed without support.

From these observations the author concludes the value of looking at past experience in running schemes cannot be over emphasised. The mechanism of grant funding firms to overcome risk is also again demonstrated.

Objectives:

The SPUR evaluation report lists the specific programme objectives, and records the scheme's performance in meeting these objectives. The report's findings are now discussed.

"*Objective 1: to support at least 60 projects in the first full year of the scheme and 150 projects annually by the third year which lead to significant advance*", (DTI, 1994b, p. 9).

111 projects were supported in the first year, which was well in excess of the target figure, with 136 in year two. Sixty eight projects had been supported up to August 1993, and the evaluation report concluded that the target of 150 projects funded by year three end was likely to have been achieved.

"*Objective 2: to stimulate at least £25 M per year additional investment in R&D, which could not otherwise have occurred, by SMEs by the third year*", (DTI, 1994b, p. 10).

The evaluators reported that it was too early in the life of SPUR to assess performance against this objective. But at the time of the evaluation it was found that 63% of firms had increased their spend and R&D capability, as a result of SPUR funding.

"*Objective 3: at least 80 new products to be marketed successfully by firms (grant holders and other firms) within two years of the end of the initial three year scheme*",
(DTI, 1994b, p. 10).

The object was likely to be met. Of the 199 firms which had responded to the questionnaire, 94 stated their intention to have their products on the market by the end of 1993. A further 72 expected their developments to be on the market by the end of the following year. Of the 22 firms visited, 14 already were marketing their products with six planning to launch theirs within a year. The evaluators commented on the effect which SPUR was having on speeding the release of products and processes into the market.

"*Objective 4: to generate additional profits in the companies supported, which when aggregated over the four years following the end of the project, amount to three times the grant*", (DTI, 1994b, p. 10.

The assessment team suggested that it was too early to measure this objective. Companies, it was observed, tend not to identify profits generated from specific products. Nonetheless applicants were asked to provide estimates of increased turnover created as a result of sales from the SPUR

supported products, and the evaluators in turn estimated that profits were approximately twice that of the grant values. On this basis, progress was concluded to be reasonable (pp. 10-11).

"*Objective 5: 70% of projects should achieve most or all of their specified technical objectives*", (DTI 1994b, p. 12).

This objective was achieved. Overall 75% of projects met their objectives. It was found that objectives were changed during the life of the projects, often resulting in a better product.

"*Objective 6: to streamline administrative procedures so that at least 75% of offers are made within 4 months of the date of the initial application*", (DTI, 1994b, p. 12).

Overall this objective was also met, and a tightening of the target from four to three months was recommended.

In helping to ensure that the SPUR scheme was in practice addressing the needs of the larger SMEs, and thus differentiating from SMART, the evaluation report (DTI, 1994b, p. 13) records that an additional objective was introduced by officials that 50% of successful applicants be SMEs employing between 50 and 500 people. The postal responses suggested the meeting of this objective, with 53% of firms employing more than 50 staff. It may therefore be concluded that support of 30% to a maximum of £150,000 offered under SPUR represents a sufficient inducement to encourage the larger SMEs to undertake R&D work.

Programme Implementation:-

Delivery Strategy:

The delivery strategy adopted for SPUR is considered to have been effective overall in addressing the perceived market failures. The SPUR evaluation report (DTI, 1994b, pp. i-ii, 16-17) in summarising found SPUR to have had a positive effect on the R&D undertaken by SMEs, and recommended its continuation. It was found that, in general, the impact of project work on competitiveness was high.

Study of the evaluation report's findings on SPUR's performance in addressing the perceived problems and in achieving the objectives 1 to 3 described above enables several observations to be made regarding the design of the delivery strategy. The SPUR evaluation points to two principal areas of market failure which together prevented firms from undertaking R&D work. Firstly firms faced difficulty in securing the investment capital necessary to resource project work, and secondly they were risk adverse. In the case of the former, the SPUR evaluation report (DTI, 1994b, pp. 8, 5-6) reported additionality to be very high. The report found most firms had applied for SPUR funding because the required funds were not available from elsewhere. High additionality suggests that application of the grant funding mechanism to make good the unavailability of investment capital represented good practice for negating this type of failure.

For the latter, grant funding in SPUR was shown to have offset the negative effects of risk. When questioned some applicants had said they considered the risk associated with their projects as too high to proceed without support (DTI, 1994b, p. 6). Similarly to the case of SMART, the SPUR evaluation report (DTI, 1994b) found grant funding to be "*an effective mechanism for providing*

the impetus to SMEs to go forward with their ideas for new products and processes", (DTI, 1994b, p. 17). Again this finding, coupled with the observation of high additionality, suggests application of the grant funding mechanism to represent best practice in reducing inhibition due to risk.

The evaluation report had highlighted the need for SMEs to play their role in innovation (p. 3). The evaluators found that although not all the projects were innovative, projects often exhibited significant technological advance (DTI, 1994b, p. 7). The mechanism of grant funding can therefore be considered as helpful in promoting innovation. Further evidence of the effectiveness of the mechanism was indicated by Objective 1 being greatly exceeded.

Providing support at a level of 30% of the eligible project costs appeared to be the correct decision. The evaluation report (DTI, 1994b, p. 8) records that companies were asked during the interviews for their views on the level of grant funding. Most were reported as judging the level of 30% to about right, but also considered the figure to be the minimum necessary.

From the progress which had been achieved towards meeting Objective 2 at the time of evaluation, the report concluded that the majority of companies were found to have increased their R&D capabilities as a direct result of SPUR funding (DTI, 1994b, p. 10). Regarding the meeting of Objective 4, the evaluators had found it too early to measure results with absolute confidence (pp. 10-11). Thus no conclusions are drawn in this thesis regarding the value of single company, grant funding in helping raising profitability in firms.

The evaluation DTI (1994b, pp. 9-12) reported a number of other benefits, which illustrated other gains which can accrue from applying the mechanism of grant funding. It was found that the products and processes developed by the SPUR applicants reached the market very quickly, and early evidence had suggested good levels of success were being achieved. Evidence was also derived from looking at the scheme's performance in meeting Objective 3, where good progress had been observed in firms bringing new products to market. The evaluators had commented on SPUR's effect on speeding the release of these products. Thus it can be concluded from these observations that the mechanism of grant funding is effective in stimulating investment in R&D within firms, and stimulating the development of new products.

As with SMART, the SPUR evaluation noted the effect of DTI grant funding to lever bank support. Responses to the questionnaires showed that the gaining of SPUR grants had given the banks greater confidence in the projects rendering them more willing to loan money (p. 5).

Programme Administration:-

Project Appraisal – Mr Papworth, the official responsible for the overall management of SPUR, informed the author that in SPUR, workshops were run by the Regional Offices to apprise applicants of the scheme eligibility criteria, and how proposals should be structured. Firms were required to first submit outline proposals, from which potentially good applicants would then be selected and invited to develop full proposals. Papworth reported to the author that this strategy had worked well, with the quality of proposals received being high. Papworth was not sure if all of the Regional Offices (ROs) were running workshops for SPUR prior to the 1994 evaluation. Papworth was not involved with SPUR at its inception. The author spoke to Mr. Roy Evans, who had responsibility for operating SPUR in the period 1992 to 1997. Evans was of the opinion that the ROs were holding workshops to promote SPUR and asking for outline proposals to ensure the submission of quality proposals, from an early stage in the programme's life.

The evaluation report had shown that Objective 5, concerned with the number of projects meeting their objectives, had been achieved, (p. 12). The author suggests that the combination of running briefing workshops, and the filtering effect of selecting applicants from outline proposals, helped ensure only good, well thought out projects were funded thereby contributing to the good result. Taking Papworth's observations also into account, deploying the mechanism of combining applicant briefings and vetting initial ideas is thus considered as best practice in identifying viable projects.

K.3.3 The Consultancy Initiatives

Issue Identification:-

Rationale:

Appendix F discusses the rationale for CI and the market failures that CI was aimed at addressing. The author proposes they may be summarised as follows:

a). Staff in SMEs lacking the necessary management skills to manage business operations effectively, such that firms are competitive in the market place.

b) That SMEs tend not to hire outside expertise as a means of 'making good' their lack of competence in key management areas. SMEs also perceived consultants as irrelevant and expensive, and hence considered their services to be of poor value.

In identifying the market failures, three sources of information were consulted as follows:

- Inspection of programme evaluation reports,
- Inspection of White Papers,
- Personal Experience.

The final evaluation report of CI (SQW (1992); (comprising 92 pages) describes the performance of the scheme in meeting its objectives (pp. i-viii). From inspection of the evaluation results, the author concludes that the programme's rationale was valid, indicating the efficacy of adopting the above mechanisms in identifying problems. This conclusion is based on the assumption that the sample of firms questioned during the evaluation were representative of the wider population of SMEs. Ernst & Young support this view. In their review of the Scheme Contractors, Ernst and Young find the Consultancy Initiatives to "*represent a substantial record of achievement. Over 10,000 projects will have been completed by the end of 1989 and client satisfaction levels are remarkably high*", (Ernst & Young, 1990, p. 6).

In particular the author would cite the reported 37% of projects displaying additionality in the form of prompting firms to hire consultants, (plus 18% of firms commissioning larger projects, and a further 17% of projects were brought forward as a result of grant funding), as implying that a reluctance to use external expertise existed, (SQW, 1992, p. iii). SQW also reported that 52% of

firms felt their management skills to have been improved, indicating existence of management weaknesses in SMEs (p. vii).

Setting Objectives:

Examination of the approaches adopted in drawing up the objectives for CI, revealed the principal mechanisms employed as:

- **Taking account of Government policy** - In setting the objectives officials took their lead from the DTI White Paper (HMSO, 1988, p. 24-27).

- **Analysis of previous experience recorded in evaluation reports**

- **Obtaining the 'critical' mass necessary to demonstrate the value of consultancy to the wider population** - The importance of establishing a target number of firms having experienced successful consultancy projects (3% of the eligible firms) was stressed in achieving a sufficient nucleus of companies for the demonstrator effect to have impact. From his experience, the author would judge the figure as being of a sufficiently small proportion of the total population of firms as to render the figure as probably attainable.

SQW do not indicate in their evaluation the extent to which CI supported firms subsequently influenced the decisions of others, and hence no conclusions can be drawn regarding the efficacy of choosing the 3% figure.

The EI evaluation report (SQW, 1992, pp. i-viii) indicates CI as being overall successful in meeting its objectives, and the procedures adopted in setting the schemes objectives are therefore considered as further examples of good practice.

Programme Implementation:-

Delivery Strategy:

For each of the market failures (a) and (b) described above, the operation and performance of the key delivery mechanisms selected to correct them is now discussed.

Market Failure (a): Staff in SMEs lack the necessary management skills to manage business operations effectively such that firms are competitive in the market place. The overriding objective was to correct a situation of poor management. The overall delivery strategy was to improve the management performance in firms by encouraging them to hire consultants.

Inspection of the final evaluation report on CI (SQW, 1992, p. iv) provides the evidence which indicates the consultancy mechanism to be effective in improving company management. Around 80% of firms receiving support implemented the recommendations of their consultancy projects. SQW found that in 57% of these cases, implementation had resulted in fundamental change in approach to business operation (p. 51). SQW comment that CI was successful in causing firms to rethink and change the way they operate (p. 51). As discussed earlier, 52% of firms experienced enhancement of management skills, with half of these exhibiting a dispersion of skill among the management teams, rather than residing in just a few individuals (p. 56).

However before consultancy can be applied, there was the second area of market failure to overcome:

Market Failure (b): SMEs are reluctant to hire outside expertise as a means of 'making good' their lack of competence in key management areas.

The objective was thus to overcome this reluctance. This was achieved by employing the delivery mechanism of grant funding:-

Provision of grants - To encourage SMEs to use consultants by offering them grants towards the costs of their consultancy projects.

The CI evaluation report (SQW, 1992, p. iii) found that 37% of firms would not have embarked on their consultancy projects without grant funding. A further 18% of projects were found to have been enhanced as a result of assistance, with an additional 17% projects exhibiting a bringing forward of the start date. From these results the author would observe that the mechanism of subsidised consultancy is effective in increasing the use of external expertise.

An aim of officials was to change attitudes to the use of outside consultancy. Around 40% of applicants stated that they were more likely to hire consultants at the full price in the future (SQW, 1992, p. 81). A similar percentage was quoted for the number of firms having hired consultants at the full market rate as a result of their CI projects. It may therefore be concluded that subsidising consultancy is also effective in helping SME managers perceive the use of outside help to be valuable.

In addition to the two areas of market failure (a) and (b) set out above, the programme ROAME statement (DTI, 1988b, paragraph 5.4) also highlighted a lack of information about sources of specialist help. The evaluation report usefully comments on the value of the demonstrator effect to help raise awareness more generally about the value of using consultants. It was found that around 60% of the assisted firms had informed other businesses about their consultancy projects, and of these businesses approximately 30% had hired consultants themselves albeit mainly with CI assistance (some 70% of these cases), (SQW, 1992, p. 82). Nonetheless the demonstrator effect had been shown to be effective in helping to promote the value of using consultants, and is hence regarded as a best practice mechanism.

Programme Administration:

The final programme evaluation report (SQW, 1992, pp. 2-4) looks at several of the steps taken to ensure effective management of the CI, and the contribution of the individual initiatives to the success of the scheme. SQW's findings are now discussed.

Business Reviews- Enterprise Counsellors visited applicants and undertook strategic business reviews. They assessed whether firms would benefit from consultancy and helped them select which of the component initiatives of CI, would best suit management needs. They also assessed the applicant's ability to pay their share of the consultancy costs. The Enterprise Counsellors were experienced business people, recruited from commerce and retained by DTI. The author observes that the role of the enterprise counsellors was very much that of project appraisal and in essence is essentially the same task as that performed by officials under the R & T initiative.

The business review as a mechanism to help ensure good consultancy projects, and hence the meeting of programme objectives, may be considered as best practice. SQW reported that around 60% of firms were well satisfied with their consultancies; 68% of firms were reported as being happy with their consultants ability to identify problems, 61% pleased with the relevance of project recommendations, and with 60% of applicants rating them highly in terms of value for money (SQW, 1992, p. 68). Over 90% of firms were quoted as having accepted their consultant's advice (SQW, 1992, appendix A, p. vii). Officials' desire to see the Enterprise Counsellors help firms identify areas where 'quick fixes' could be introduced immediately appeared to be partially realised. SQW found approximately 60% of participants gained some benefit from their reviews beyond the positive appraisal of their grant application (appendix A, p. viii). The Enterprise Counsellor role in project appraisal is therefore considered to be an example of good practice.

Post Completion Visits - Following completion of project work, the Enterprise Counsellors made post-completion visits. This final visit aimed to add value to the consultancy, by discussing consultancy recommendations and their implementation. The visits also enabled the performance of the programme to be monitored, by assessing companies perception of the value of their consultancies (DTI, 1988b, paragraph 5.2), (SQW, 1992, pp. 3-4).

SQW reported that only around a quarter of firms perceived added value as arising from the post completion visits (appendix A, p. viii). The author suggests the figure too low to conclude that officials' aspirations had been realised. However the author would suggest that the visits represented best practice, in that they enabled officials to check consultants performance.

K.3.4 Managing into the 90s

Phase 2 of M90s was the subject of an evaluation, and the evaluation report (DTI, 1995); (comprising 22 pages) provides useful insights into the operation and performance of the scheme. The report summarises the overall aim of the programme to improve the performance of firms through better management, by disseminating information about best practice using seminars, presentations videos and written material. The second phase covered the period April 1992 to March 1995 (DTI, 1995, pp. 5-6).

Issue identification:-

Rationale:

The evaluators confirmed the existence of a valid rationale for the M90s programme. The rationale for Phase 2 of M90s was described as:

a) "*Many UK firms, especially Small and Medium Sized Enterprises (SMEs), could perform better than they do*;

b) *an improvement is in the general interest: it would enrich us all, not just them*;

c) *their managers lack the knowledge and the information which would help them improve*";

(DTI, 1995, p. 2).

For (c) the report continues:

"*This missing information is not readily supplied via the operation of the market forces mainly because consultants do not find it profitable to deal with small firms and because firms themselves are wary of buying information and advice whose value cannot be assessed until some time after the event*", (DTI, 1995, p. 2).

Identification of Market Failure:

That the rationale was valid and hence the methods adopted to determine market failures sound, is indicated by the evaluation report (DTI, 1995), which concluded that there was "*a clear role for DTI to provide such information about best practice both because of market failures which inhibit commercial provision and because of the reputation accorded to the Department by participants and its commercial impartiality*", (DTI, 1995, p. i).

Benefits to these firms, it was argued, were the provision to previously unaware companies of examples of successful applications of best practice by other firms, these acting to provide a stimulus to take beneficial action, rather than providing examples of codifiable, generic best practice.

A number of approaches were involved in collecting the evidence of problems and what best practice methods firms should adopt (see appendix G, section G.2.3, G.2.4). Among them were:

- Reference to Government White Papers
- Inspection of Advisory Council Reports
- In-house studies
- Experience of Officials
- Listening to delegates' questions at events
- Commissioning of Consultancy Research
- Previous Experience of Operating programmes
- Evaluation Reports
- Reading of research publications

The DTI evaluation report of Phase 2 of M90s (DTI, 1995, pp. 6, 8) confirms that the rationale for both Phases of the programme was valid. The M90s Evaluation Report found 'Additionality' to be high (p. 11). The assessors concluded that if the programme had not operated, then most participants would not have obtained the information which they received from other sources. Over two thirds of participants were found to have taken action as a result of participating in the scheme, and it was thought that they would not have done so if the programme had not existed.

Concluding the M90s evaluation report (DTI, 1995, p. 11) found the programme to be well liked, and the programme had achieved its objective of raising competitiveness in firms. It is hence concluded that the approaches used in identifying market failures represent good practice.

Objectives - The objectives for M90s may be summarised as follows:

"*Overall to improve the competitiveness, especially but not exclusively in SMEs. To access firms which have not yet benefited from its message*", (DTI, 1995, p. 9).

"*To present events earning ratings of "good" or "very good" from 75% of attendees for presentation, from 70% for content, and to get 60% to subsequently implement changes*", (DTI, 1995, p. 9).

These objectives were partly met. 75% of firms attending events were found to be satisfied with the presentation and content giving at least an 'average' rating, but only one third responded with a benefit rating of good or very good. However over 70% were estimated to having taken action as a result of participation (pp. 10, 15).

The M90s evaluation report (DTI, 1995, p. 11) found that M90s had provided information to firms which they would not have been able to get elsewhere. Thus the lack of information aspect of the programme rationale was found to be valid.

Programme Implementation:

Delivery Strategy - The evaluation report (DTI, 1995, pp. 4-5, 14-21) comments on the two areas of delivery mechanisms employed in M90s: awareness events such as The Strategy Road Show, and media based awareness tools such as 'Literature and Videos'. Three quarters of respondents attending events were found to be satisfied with them (p. 15), and just under 75% reported as having implemented changes to become more effective in their management (p. 16), as a result of attending. Training of staff was noted as the important change (approximately 75%). With the literature and videos, the evaluators found the needs of recipients being met, and a high level of satisfaction expressed by the recipients, (p. 19).

Finally M90s was seen as providing value for money (pp. 9-11). It was thought that the benefits of firms taking subsequent action would equal the cost of running Phase 2 in one to two years. Evidence the report suggested indicated a very high level of additionality (p. 11). M90s was found to be well liked by participating firms, (p. 11). The report found that the programme was having a positive impact on the firms participating in the programme's activities. Almost three quarters of the firms questioned reported expected increases in quality and profitability, with around half anticipating manufacturing costs decreasing as a result of attendance, (p. 17).

SMEs' subsequent actions were found to beneficial and estimates of added value suggested a pay-back time as short as one year had been achieved (p. 10). Around 75% of companies were SMEs, and the majority of these (64%) employed 100 or more staff. The programme was thus successful in gaining the attention of the target firms. Companies were almost at one in saying that M90s should continue (98% of delegates attending events, 100% of respondents in the face to face interviews), (DTI, 1995, p. 19).

The above observations suggest that M90s had addressed the perceived market failures, and had done so effectively and efficiently, such that VFM was seen to have been achieved. A high

proportion of those firms attending had taken action to implement management changes to good effect, thereby beginning to improve the problem of poor management in SMEs. A lack of training in firms, an issue raised in the M90s ROAME statements, also appeared to have been improved with many firms having embarked on training programmes. Thus it may be concluded that the application of the delivery mechanisms of 'Events' and 'Literature and Videos' represent best practice in providing firms with the information they need to improve, and engendering sufficient motivation for them to embark on projects for change. In may also be concluded therefore that they are effective in addressing the market problem of 'Information Failure'.

K.3.5 The Manufacturing, Planning and Implementation Programme

Issue Identification:-

Rationale:

The draft MPI evaluation report (DTI, 1997a); (27 pages in length) summarises the rationale for MPI (p. 5). The essential components of the rationale may be listed as:

- The strategic use of AMT can increase the competitiveness of manufacturing SMEs, but surveys of companies indicate that technologies are being installed for immediate needs, and not the in the context of the whole business operation;

- The strategic implementation of AMT is a complex task and SMEs do not have the expertise to resource the task and must seek outside help;

- Knowledge of how to implement AMT strategically was fragmented, residing in individuals, consultants, and academics. Fragmentation acted to inhibit the strategic planning of AMT because it was difficult for firms to identify the specialised sources of expertise.

- The consultancy fees associated with the strategic planning and implementation of AMT are large, and therefore also likely to inhibit firms from committing to projects for strategic planning.

In concluding the MPI evaluation report states:

"*The MPI rationale is valid. Companies which carry on with their existing business practices may expect modest growth/efficiency while companies which undertake MPI type of work are more likely to realise higher growth/efficiency. Business executives and decision makers need to be encouraged to embrace proven best practice rather than cling to the 'old ways of doing things' - doing the right things rather than doing things right. An MPI type of programme is a useful aid to spreading this message*",

(DTI, 1997a, p. 23).

The report continues by finding the overwhelming majority of applicants and consultants considered that their projects were successful, that they had benefited, and thought the scheme worthwhile.

The author takes confirmation of the validity of the rationale to indicate the efficacy of the methods adopted in identifying the market failures. The approaches used in collecting evidence (see appendix H, sections H.2.2 and H.2.4) may be summarised as follows:

- Programme evaluation reports,
- Previous Experience,
- Research Papers and other Publications,
- In-house studies,
- Commissioned Studies,
- Studies commissioned by other bodies,
- Government Advisory Councils,
- Discussion with practitioners.

That the rationale was upheld by the evaluators suggests that the above methods were effective and are representative of good practice.

Objectives:

The draft MPI evaluation report discusses MPI's specific objectives and the programme's performance in meeting its targets, (pp. 9-13). The report's findings are now summarised.

Objective 1: The scheme will become self funding by the end of year three - the evaluators found this objective to have been unrealistic. Implementing AMT strategically is a complex process with firms not possessing the necessary skills or finance to resource project work. The evaluators concluded that with a lack of dissemination of programme results (see below), it was not feasible for a critical mass of firms to be created, such that non participant SMEs could be encouraged to undertake projects for holistic planning without support.

The author observes that setting of the self funding target did not take into account 'life in the real world', and perhaps represents poor practice. However from his personal knowledge the author would make two important observations in defence of setting the objective. First it was intended that a second phase of MPI be launched as the end of the second year, when it was planned to close the initial phase for new applications. The demonstrator effect could be seen to be having a beneficial effect in CI, and it was hoped that the combination of phase 1 and 2 applicants would create the critical mass required for the demonstrator effect to work. Officials in setting the target could not have anticipated a subsequent reduction in budgets across DTI, which required the allocation for promotion to be cut significantly and prevented adequate exposure of MPI. This resulted in a reduced the flow of applications (see below).

Secondly the draft evaluation report (DTI, 1997a, p. 22) refers to the lack of dissemination of project results. Officials were particularly keen for MPI companies to participate in the M90s

Inside UK Enterprise (IUKE) scheme, which relies on the demonstrator effect as a principal delivery mechanism. Only a handful did so.

However the author again argues that if the scheme had not suffered reductions in budgets, then the potentially larger number of projects identified would have helped the demonstrator effect to have been experienced. The author also suggests that the above scenario illustrates that depriving schemes of approved funding is a bad practice, as the performance of a programme can be adversely affected to the extent whereby its ability to meet objectives and in consequence achieve VFM, are both severely prejudiced. The importance of scheme promotion is also emphasised.

Objective 2: 200 projects will be identified by the end of year 2 - This objective was not achieved with only 122 projects funded. The evaluation report refers to two problems, one the premature announcement of the scheme in Parliament which stimulated initial interest, before systems were put in place by the scheme contractor to handle applications. Thus interested firms were turned away and lost interest. Secondly, as discussed above, the lack of promotion meant applications were not brought forward in the necessary numbers.

Objective 3: A number of targets were set for profit and efficiency - On 'profits' the evaluators commented that experience of operating SMART and SPUR had shown it to be very difficult to gauge with certainty the measure of improvement in profitability due to an intervention. The reason given was that it was very hard to differentiate the exact origins of profits in company accounts. Setting profitability targets may therefore be regarded as bad practice. On 'efficiency' the scheme contractor had not collected the source data required, and an assessment of MPI's performance in raising operations efficiency could not be assessed.

Objective 4: Averaged across projects, MPI will secure annual training of 600 man weeks for each of the planning and implementation phases - The evaluators observed that the objective was not sufficiently well defined to determine the schemes performance with accuracy. Training had occurred, but by staff at different levels in different projects. Firms could not quantify the levels of training as they did not keep records and some were confused over the role of training. With hindsight, the author observes that officials should have given more thought to the setting of this target, perhaps by being more specific by describing the areas in which training was expected to take place. Firms should have been required to maintain training records.

Objective 5: Approximately 100 projects to be incorporated into the M90s "Inside UK Enterprise (IUKE)" scheme by the end of year 5 - The programme failed to meet this objective, with only five MPI firms joining the scheme. The evaluators confirmed the role that IUKE could have played in adding value to MPI activities:

"*The IUKE scheme could have formed a useful vehicle for wide dissemination of the worth of MPI activities and potentially could have encouraged more companies to see the value of an MPI approach to their business*",

(DTI, 1997a, p. 12).

The evaluation report continued by the flagging the problems which prevented more MPI applicants taking part in IUKE. The evaluation found very few companies aware of their 'obligation' to take part in the scheme. Many when questioned further indicated that they would not have been prepared to participate for reasons of not wishing to divulge the 'secrets of their success'. The evaluators highlighted that communications between officials and the scheme contractor could have been better. The author disagrees, as he and the scheme contractor

discussed the subject at length, but agreed that applicants could not be forced to join IUKE. However they were asked on their application forms to confirm their intention to participate. Given the report's findings, the author suggests that it is possible that firms simply chose to ignore the requirement. He however recognises that firm's possible unwillingness to take part on confidentially grounds, should have been taken account of.

The evaluators also refer to reorganisation within DTI causing responsibility for MPI to move to other officials in another directorate. Previously responsibility for both MPI and M90s resided within the same division, and there was close communication between MPI and IUKE. The link was effectively broken with the reorganisation, and the MPI projects were largely overlooked (DTI, 1997a, p. 13). It is the view of the author that it is this latter factor which was the root cause of few MPI projects entering IUKE, a fact which once again serves to illustrate that care needs to be taken to maintain continuity during reorganisation.

Objective 6: Annual seminars targeted at consultancies, HEIs, and RTOs, involved in research, development, and implementation of AMT with 100 organisations participating during the life of the scheme -

This object was not met. Four seminars were held at the end of the programme for participant firms and consultants. The results were disappointing with only 24 companies attending the events. No events for the broader audience of organisations were held, which the author is able to advise was due to budgetary constraints.

Objective 7: MPI case studies to be published quarterly: -

Although these were not published initially, the evaluators reported that the target was achieved during the latter period of running MPI. The evaluation report also records the work of Professor Hill of the London Business School and his analytical co-ordination team, who submitted papers to be published in professional journals. Analysis of the lessons learned in the MPI projects were also used as the basis for the production of a DTI booklet on customer focused manufacturing called *Making it Pay*, (DTI, 1997b).

Objective 8: To establish 30 advisor consortia during the life of the programme -

This objective was exceeded, with in excess of 60 new consortia formed. However the evaluation report found that at the time of the evaluatory work, many had disbanded or were no longer undertaking MPI type of projects.

Programme Implementation:-

Delivery Strategy:

The principal elements of the delivery strategy are summarised, and their performance in meeting objectives, and hence the reduction in perceived market failures, is now discussed.

Overcoming the Barriers to Use of Consultants - Central to the operation of MPI was encouragement of SMEs to hire external advisors to help with their strategic projects. MPI used grant funding to reduce the barrier of cost and risk which prevented SMEs from committing the necessary resources. As shown above, this was a principal area of market failure. Of the firms contacted 22 claimed that they would not have started their MPI projects without grant support (DTI, 1997a, p. 17). A further 38 reported that their projects were either enhanced or brought

forward as the result of grant funding. Only six were found to be non additional; that is the firms would have gone ahead anyway (p. 18).

The author regards these findings as demonstrating a good level of additionality, providing a further example of the role of grant funding in overcoming firms' inhibitions to risk. Application of the grant mechanism to overcome inhibition is hence viewed as a best practice approach.

A further problem identified was that firms were not implementing AMT strategically. The MPI report found that "*for most companies the grant provided the catalyst and a platform for change without which the management and manufacturing practices would have carried on as before*", (DTI, 1997a, p. 18). This suggests that MPI was successful in triggering improvement within the applicants' management.

Lack of Consultancy Service Provision - The marketing opportunity represented by the scheme grants was used to motivate smaller consultancies and academic departments, to form advisor consortia having the collective expertise to resource holistic project work. The MPI evaluation report showed the mechanism to be effective, with over 60 advisor consortia formed (DTI, 1997a, p. 10). The author notes consultants similarly being motivated to in effect promote DTI activities, as evidenced by consultants promotional role in CI (see appendix F, section F.9).

The approach is therefore considered as good practice, having addressed the fragmentation of expertise in holistic planning, rendering it more accessible to SMEs through the formation of the consortia.

Installing good management in firms - As was the case with CI, the MPI evaluation report suggests that the consultancy mechanism was successful in helping install effective management into the assisted firms.

Improvements in management were evidenced by most participants reporting having experienced considerable benefits, such as increased profits, greater efficiency in production and other processes, increased market share and exports (DTI, 1997a, p. 17). Reduced inventories and lead times had been achieved, along with a more flexible and responsive approach to the market, and better integration of new equipment. Interestingly two companies stated that they would have ceased trading without MPI! Importantly some companies reported a better understanding of strategic planning, and many of the family businesses found their projects to have produced major surprises, indicating that previously they had not understood how their markets operated (p. 15).

It is therefore concluded that the encouragement of firms to use external expertise helps educate personnel in strategic management issues. The mechanism therefore represents good practice in helping to install permanent expertise into companies.

Raising AMT Competencies within Firms and Consultants - Knowledge was to be transferred from the individual consultants to the SME staff through mutually shared experience. Similarly close working relationships allowed transfer of knowledge from company staff to their advisors. The evaluation report (DTI, 1997a) makes no specific observations in this area, but concludes that both companies and consultants had become more aware of the need for strategic planning (p. 23). Thus competencies were raised on both sides, but it is not possible to conclude with confidence that the 'hand in glove' relationship sought in MPI projects, was an effective contributor to the learning process.

Raising AMT Competencies: The Wider AMT Community - The objective of Analytical Co-ordination, (or Technical Tracking as it later became known), was to ensure that the 'good practice' lessons learnt through experiment within the MPI projects were formally recorded. This would enable DTI to extend the benefit beyond those directly involved in the programme, using dissemination activities like those of M90s. The aim was to capture the best practice lessons as they were learnt.

Professor Hill drafted a detailed and comprehensive report on the Technical Tracking process (Hill, 1996a), covering the conduct of project work in MPI. Much of value is contained within its pages, but as far as the author is aware officials have not made use of its contents. Professor Hill was asked to produce a short summary of his findings (Hill, 1996b) from which officials drew some information in preparing the booklet *Making it Pay* (DTI, 1997b). However essentially, due to reorganisation and changes in support policy, where emphasis was shifted from directly helping firms to one of providing them with the information they need, (for example the introduction of the Business Links) no use has been made of the lessons contained in Professor Hill's final report. This is a waste and is to be regretted.

Analytical co-ordination was able to identify case study material, which as discussed above was disseminated via articles in journals.

Lack of Self Help Tools - It was expected that the lack of tools to aid the planning process might be alleviated in two ways. Firstly it was hoped that new products would emerge as members of the Tracking Team advised others of the good practice methodologies discovered. Secondly it was intended that the case study information could form the basis of self-help packages.

There is no evidence to suggest that any tools were prepared as a result of MPI, and the value of this approach cannot therefore be verified.

Overall the MPI evaluators found the majority of participants and consultants judged their projects to be successful, and viewed MPI as a very good scheme (DTI, 1997a, p. 23). Consideration of continuing with MPI like schemes to provide advice and best practice guidance to SMEs was recommended (p. 24). The overall thrust of the delivery strategy, taking account of what was achieved, is hence considered appropriate for dealing with the market problems which had been identified.

Administration:

Competitive Tendering - In the early stages of MPI, DTI insisted that firms select their consultants via the competitive tendering process. Competitive tendering was seen as a good practice approach which firms should learn to undertake. However the evaluators confirmed the experiences of the author, that many firms found the process too difficult for them to undertake (DTI, 1997a, p. 20). A number did not know how to approach drawing up a tender specification, or how to evaluate consultants and their proposals, given the complexity of the holistic planning task. The insistence of competitive tendering was subsequently dropped.

The author would propose that the initial policy was in fact bad practice, as it did not take account of the levels of expertise within firms. With hindsight the author further suggests that the imposition of competitive tendering flew in the face of what officials had on the one hand

perceived as a market failure, that is firms lacked an understanding of the holistic planning of AMT!

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LIST OF ACRONYMS

ACARD	Advisory Council for Applied Research and Development
ACOST	Advisory Council On Science and Technology
AIST	MITI's Agency of Industrial Science and Technology
AMT	Advanced Manufacturing Technologies
AMT	Advanced Manufacturing Technology (subcommittee of ACOST)
AMTC	Advanced Manufacturing Technologies Committee (of DTI)
ATP	Advanced Technology Programme
AU	Assessment Unit (of DTI)
BEP	Biotechnology Exploitation Platforms
BGS	British Geological Survey
BIS	Business Improvement Service
BL	Business Links
BLD	Business link Directorate (DTI)
BLs	Business Links
BMFT	German organisation running Materials Research Programme
BOTB	British Overseas Trade Board
BP	Business Planning Initiative
BPR	Business process reengineering
BRITE	Basic Research in Industrial Technologies
BSO	Business Statistics Office
BTAS	Business and Technical Advisory Services (consultancy scheme)
CAD	Computer Aided Design
CADCAM	Computer Aided Design Computer Aided Manufacture
CADEC	Computer Aided Data Exchange Centre
CAE	Computer Aided Engineering
CAM	Computer Aided Manufacturing
CAPM	Computer Aided Production Management
CBI	Confederation of British Industry
CBS	Consultancy Brokerage Service
CCTA	Central Computer and Telecommunications Agency
CD	Competitiveness Division (of DTI)
CD ROM	Compact Disk Read Only Memory
CEO	Chief Executive Officer (of organisation)
CEST	Centre for Exploitation of Science and Technology
CI	Consultancy Initiatives (DTI)
CII	Communications and Information Industries Directorate (of DTI)
CIM 2000	Computer Integrated Manufacturing 2000 (a scheme)
CIM	Computer Integrated Manufacturing
CIMAP	CI Manufacturing Applications Protocols
CMG	Commander of the Order of Saint Michael and Saint George
CNC	Computer Numeric Control
CPU	Central Policy Unit
CSA	Chief Scientific Advisor (to Government)
DEA	Department of Economics Affairs
DES	Department of Education and Science
DES	Design Initiative
DETR	Department of the Environment, Transport and the Regions
DGIV	Competition Directorate in EC
Dkr	Danish Kroner
DM	Deutschmark

DMG	Departmental Management Group
DOE	Department of the Environment
DRSA	part of report title
DSG	Departmental Strategy Group
DSIR	Department of Science and Industrial Research
DTI	Department of Trade & Industry
EC	European Commission
EEC	European Economic Community
ECU	European Currency Unit
EI	Enterprise Initiative (DTI)
EID	Enterprise Initiative Division (of DTI)
ELSA	Evaluation and Learning System Approaches
EMG	Evaluation Methodology Group (of DTI)
EPIC	Evaluation and Policy Improvement Committee (of DTI)
ERA	Electrical Research Agency
ERDF	European Regional Development Fund
ESPRIT	European Strategic Programme for R & D in IT
ESRC	Economic and Social Research Council
EU	European Union
EURAM	Advanced Materials for Europe
EUREKA	A pan European programme
EWG	Evaluation Working Group
FIS	Financial and Information Systems Initiative
FMI	Financial Management Initiative
FMS	Flexible Manufacturing Systems
FOS	Fibre Optics and Optoelectronics Scheme
FRM	Financial Resource Management Directorate, part of PEFO (in DTI)
GDP	Gross Domestic Product
GICP	General Industrial Collaborative Projects (a DTI programme)
GMG	Group Marketing Grant (MAFF programme)
GO	Government Office
Grade 2	(Head of Command) became Director General
Grade 3	became Deputy Director General.
Grade 4	- no successor grade
Grade 5	(Branch Head) became Director of Directorate
Grade 6	(Deputy Branch Head) became Band C (PR11)
Grade 7	(Section Head) (G7) became Band C (PR10)
HEI	Higher Education Institution
HEO	Higher Executive Officer became Band B (PR7 and PR8)
HM Treasury	Her Majesty's Treasury
HMSO	Her Majesty's Stationery Office
HMT	Her Majesty's Treasury
HQ	Headquarters
IAB	Innovation Advisory Board
IBIS	name of a specialist consultant company
IBM	International Business Machines company
IBMU	Innovation Budget Management Unit
ICAM	Integrated Computer-Aided Manufacturing
ICI	Imperial Chemical Industries Ltd
IDA	Industrial Development Act 1982
IDEF	ICAM (Integrated Computer-Aided Manufacturing) DEFinition methodology
IDEF0	function/activity modelling in IDEF

IDEF1	information modelling in IDEF
IDEF2	dynamic modelling in IDEF
IP	Intellectual Property
IIPC	Innovation Individual Programmes Committee
IPC	Individual Programmes Committee (of DTI)
IPS	Innovation Policy and Standards Directorate
IRT	Innovation Research and Technology directorate
ISG	Implementation Strategy Group (Business Link Steering Group)
ISO	International Standards Organisation
ISTEL	name of a specialist consultant company
IT	Information Technology
ITS	Innovation and Technology Support
ITT	Invitation To Tender
IU	Innovation Unit of the Research Policy and Technology (RTP) Division (of DTI)
IUKE	Inside UK Enterprise (M90s scheme)
JIT	Just In Time
KM	Knowledge Management
KPMG	name of a consultant company
LA	Local Authority
LBS	London Business School
LINK	A UK Government Scheme for promoting Research and Development
M90s	Managing into the 90s (DTI programme)
MABs	Manufacturing Action Briefing Seminars (DTI programme)
MAFF	Ministry of Agriculture Fisheries & Food
MAM	name of an author organisation
MANDARIN	part of DTI Intranet
MAP	Manufacturing Applications Protocols
MAPCON	Micro Electronics Applications Projects Consultancy Scheme
MBP	Management Best Practice Branch (in Manufacturing Technology and Services Division of DTI)
MdF	French unit of currency
MDS	Marketing Development Scheme (MAFF programme)
MDU	Mobile Demonstration Unit
MFR	Manufacturing Systems Initiative
MINIS	Management Information Systems for Ministers
MinTech	Ministry of Technology
MIPTT	Ministry of Industry, Mining, Post and Telecommunications and Tourism (France)
MIT	Manufacturing and Information Division (of DTI)
MITI	Ministry of International Trade and Industry, Japan
MKT	Marketing Initiative
MMC	Monopolies and Mergers Commission
MMT	Manufacturing Management and Technologies Division (of DTI)
MoD	Ministry of Defence
MORI	Market & Opinion Research International Limited
MP	Member of Parliament
MPI	Manufacturing, Planning and Implementation programme (DTI)
MRP	Materials Resource Planning
MTD	Manufacturing Technology Division (of DTI)
MTM	Manufacturing Technology and Management division (of DTI)
MTS	Management and Technology Services Division (of DTI)
NAO	National Audit Office
N.B.	nota bene

NC	Numerical Control
NPL	National Physical Laboratory
OBE	Order of the British Empire
OECD	Organisation for Economic Cooperation and Development
OGD	Other Government Department
OST	Office for Science and Technology (in DTI)
PA	the PA Consulting Group
PC	personal computer
PEFO	Department's Principal Establishment and Finance Officer (DTI)
PERA	Production Engineering Research Association
PICT	Programme on Information and Communications Technologies (ESRC programme)
plc	Public limited company
PMFE programme	Programme for the mastery of the development of the electronic fabric
PQ	Parliamentary Question
PR	Pay Range
PSA	Public Service Agreement
PTO1	Professional and Technology Officer, Level 1
QDE	Quality, Design, and Education Division (of DTI)
QUA	Quality Initiative
R&D	research & development
R&T	Research & Technology Initiative (DTI)
RACE	R & D in Advanced Communications Technologies for Europe
RAPRA	Rubber And Plastics Research Association
RIPA	Royal Institute of Public Administration
RO	DTI Regional Office
ROAME	short form of ROAMEF
ROAMEF	Rationale, Objectives, Appraisal, Monitoring, and Evaluation and Feedback
RSO	Regional Supply Office
Rt Hon	Right Honourable
RTC	Regional Technology Centres
RTD	Research and Technical Development programme (EC programme)
RTO	Research and Technology Organisation
RTP	Research and Technology Policy Division (of DTI)
S&T Act	Science and Technology Act 1965
SAC	Scottish Agricultural College
SATRA	Shoe and Allied Trades Research Association
SBIR	Small Business Innovation Research Programme (a Untied States initiative)
SBS	Small Business Service (a DTI Next Steps Agency)
SCNG	Supply Chain Network Group
SDA	Scottish Development Agency
SEFIS	Small Engineering Firms Industrial Support
SEO	Senior Executive Officer, became Band C (PR9)
SERC	Science and Engineering Research Council
SFI	Support For Innovation
SMART	Small Firms Merit Award for Research and Technology (DTI programme)
SME	Small & Medium sized Enterprises
SMET	SME and Technology Directorate of DTI
SMMT	The Society of Motor Manufacturers and Traders Limited
SoS	Secretary of State

SPTO	Senior Professional and Technology Officer
SPUR	Support for Products Under Research (DTI programme)
SQW	Segal Quince Wicksteed - a consultant company
SSCIM	Small Scale Computer Integrated Manufacturing
STEP	Standard for the Exchange of Product model data
SSO	Senior Scientific Officer
STIP	System Technology Integration Programme (DTI programme)
SUPERNET	A DTI Programme
TCS	Teaching Company Scheme
TEAM FORUM	part of DTI's Intranet
TEC	Training and Enterprise Council
TEKES	Finland's Electronic Publishing and Printing Programme
TESE	Technology, Economics, Statistics, and Evaluation directorate (DTI)
TI	Technology and Innovation Policy Division (of DTI)
TQM	Total Quality Management
TSB Bank plc	Trustee Savings Bank plc
TUC	Trade Union Congress
TV	television
UK	United Kingdom
UKREP	Office of the United Kingdom Permanent Representative to the European Community
US	United States (of America)
USA	United States of America
VFM	value for money